
PRACTICAL OBSERVATIONS
ON THE
TREATMENT
OF
STRICTURES IN THE URETHRA.

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TREATMENT

OF

STRICTURES IN THE URETHRA.

BY

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—————Omne per ignem
Excoquitur vitium.—————

VIRG. GEORG.

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TO
DOCTOR PATRICK RUSSEL.

MY DEAR SIR,

ALLOW me to dedicate to you the following Observations, that your friendship for the Author, and the high sense he has of its value, may be known to the public.

You who, with unexampled magnanimity, have successfully explored the nature of the most dreadful of human maladies, will see in a favourable light whatever tends to investigate, or relieve, the symptoms of disease.

From you I am certain of the indulgence of a Friend, and your protection will give a favourable bias to the public opinion.

I remain,
with the highest esteem,
your sincere Friend,

*Leicester Square,
Nov. 3, 1795.*

EVERARD HOME.

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INTRODUCTION.

IN laying before the public the following observations on the treatment of a very painful and distressing complaint, and endeavouring to obviate the objections that have been thrown out against the use of caustic, as a remedy, I am actuated by two motives ;—the desire of rendering a service to my profession, and that of paying a new tribute of gratitude to the memory of Mr. Hunter ; to whose ingenuity the world is indebted for the original proposal of such a mode of practice, and the invention of a safe and easy method of conveying the caustic to the seat of the disease. I cannot better perform either of these tasks than by attempting to elucidate and extend his very useful discoveries.

Mr. Hunter is universally allowed to

have been a skilful anatomist, nor has any one been hardy enough to deny that he excelled his contemporaries in an intimate knowledge of the changes in structure, which are met with in different parts of the body, in consequence of their having been diseased. In these acquirements he was unrivalled; and in pursuing them, he brought to light the information we at present possess respecting the nature of strictures in the urethra.

The account he has published of the different stages of this disease, taken from actual observation in the dead body, and illustrated by engravings, contains a connected body of evidence, established upon facts, to which no one can refuse an assent. There are, however, practitioners who are unwilling to give more credit to these facts than is absolutely necessary. They admit such cases to occur, but at the same time do not choose to give up the opinions they

had formerly imbibed; and this they reconcile to themselves by supposing the appearances mentioned by Mr. Hunter to arise only in extraordinary cases, while those taken notice of by former writers, are more commonly met with; but in support of this no anatomical facts can be adduced.

In surgery, as in other practical arts and professions, attempts at improvement are considered by many as hasty and unwarranted innovations. This caution, when restrained within proper bounds, answers a good purpose, by inducing men qualified for the task, to examine with accuracy whatever improvements in the art are proposed; and to prevent all those which do not bear the test of their inquiry, from being obtruded on the world. This salutary care degenerates, however, in less liberal minds into mere jealousy, and leads the prejudiced to condemn improvements without put-

ting them to the trial, or even making themselves masters of the intentions for which they were proposed.

I have been led to make these observations from recollecting a circumstance which happened when the mode of applying caustic to strictures was first introduced into practice. At that time a gentleman who had many years laboured under the disease, and had in vain tried every other mode of treatment then in use, upon hearing that some improvements had been proposed by Mr. Hunter, was desirous of availing himself of them : he consulted four of the professors of one of the first medical universities in Europe upon this subject ; he stated, that in the present stage of the disease, no bougie could be passed, that the symptoms were of a very distressing nature, and he requested their opinion respecting the use of the caustic, or any other mode by which they thought he might obtain

relief. These gentlemen subscribed their names to the following written opinion. "That they had no mode of relief to recommend, but that the application of caustic was a practice which they did not hesitate to condemn; since they thought the disease, bad as it might be, was more supportable than so violent an application, which must be productive of the worst consequences, both on the urethra and bladder."

This was the opinion, with which they were so well satisfied, that a number of facts, stated by a surgeon high in practice, higher in reputation, and unimpeached in veracity, had not sufficient weight to raise a doubt in their minds. This opinion, so signed, was afterwards put into my hands by the patient, who had the courage, after this declaration, to submit to the use of the caustic; from which he received considerable benefit, without experiencing any of the dreadful

effects which theory had so strongly predicted.

That practitioners should not hastily adopt a mode of practice of which they were afraid, and the effects of which they could not reconcile to the doctrines they had been taught, is natural and right; in justice to their patients, as well as to themselves, they were to wait till the practice was sufficiently established to authorize them in their acquiescence.

This is the line of conduct impartial men would naturally pursue: but to form an independent judgment requires more resolution than many possess; and to investigate an intricate disease demands more opportunities, as well as more professional acquirements, than fall to the share of every practitioner. To approve or condemn, without a knowledge of the subject, requires nothing more than prejudice; by such prejudice Mr. Hunter's opinions have been too often esti-

mated, and any opposition to which they were liable from this mode of judging, his natural warmth of temper, and want of knowledge of the world, made him ill qualified to avoid or to repel.

Mr. Hunter has been held out to the world as a man of ingenuity, and of a speculative turn, who indulged himself in forming theories, and advancing opinions, whose chief merit was their novelty and singularity. This character has been artfully applied to him, by affecting to give him a certain degree of credit, but in reality to take from his professional labours their true value, which arises from their being the result of deductions from facts, either developed in the progress of disease, or brought to light by experiments instituted for that purpose.

His real character was directly contrary to the representation abovementioned. So far from being of a turn for

fanciful speculations, his mind was exclusively fitted for the investigation of practical and experimental truth; he had even an aversion to all hypothetical reasoning, and in disquisitions of every kind, the only part that interested him was the authenticated facts which they contained. Hence it was that he had little taste for works of imagination or poetry, his attention being so absorbed in considering the combination of the facts, that he overlooked the other beauties of the composition.

This turn for research formed the most prominent feature in the character of Mr. Hunter; it never left him, it never could be said even to be dormant, and he was always happy when allowed to indulge it. To this natural bent of his mind the world is indebted for his uncommon exertions in promoting medical science, and extending his experimental inquiries.

In the investigation of whatever engaged his attention, he not only formed no theory of his own, but even disregarded the observations of those who had preceded him, leaving his mind unbiassed, to make use of its own powers in procuring the various facts from which his future observations and conclusions were to be drawn.

This mode of prosecuting medical inquiry upon the model of the great Lord Verulam, which is seldom so strictly employed, required the genius and talents of a Hunter to insure its success. His education under his brother allowed him to lay in a stock of anatomical facts respecting both health and disease, which formed a solid foundation for his future acquirements; his natural perseverance made him unwearied in his labours, and unremitting in his pursuits; and his zeal for improvement, which amounted to enthusiasm, supported him under the diffi-

culties and disappointments which in researches of that nature so frequently occur.

Anatomical and medical facts collected and registered by such a man must prove of infinite value; they are materials of which every one may avail himself, who is engaged in the same pursuits, independent of any opinions whatever. Some of his conclusions, from the fallacy of human reasoning, may prove erroneous; others, although just, may be afterwards found to have been extended beyond their proper limits; but the facts themselves must remain, and in the course of progressive improvement, may materially assist in exploring many laws of the animal economy, both in health and disease, with which we are at present almost entirely unacquainted.

That part of Mr. Hunter's labours which is connected with the subject of the present observations, consists wholly

of facts, nothing rests upon opinion, either with respect to the nature of the disease, or the mode of treatment.

In his works we have a detail of the symptoms and appearances in the different stages of strictures in the urethra. Where the stricture was impervious, or nearly so, he was led from the nature of the obstruction, to see the inefficacy of the bougie; he therefore considered himself warranted in resorting to other means, and had recourse to the application of lunar caustic. This mode of treatment he found, upon trial, capable of destroying the stricture, without doing any material mischief to the urethra; he made use of this application in a number of cases, and finding it successful, was led to adopt the practice, and to lay it before the public.

In making these remarks, I have not been actuated by the wish to pass censure on those who differ in opinion from

the late Mr. Hunter, but to do justice to his professional abilities, which, although generally admired, are not sufficiently understood.

I have been prevented from going more at length into this subject, from the consideration that I was too nearly connected with him to be admitted as an impartial judge; and the event of his death is still too recent to allow the passions and prejudices of his contemporaries to have subsided, and his merits to be held in their due estimation.

From the same motives, when I felt myself called upon to give a short account of his life, I was led to confine it to bare facts and simple events, reserving such observations as might be thought to rest upon opinion, to some more distant period. I could not, however, offer to the public the remarks contained in the following pages, without having previously stated what Mr. Hunter had done

on the subject ; the additions he had made to our knowledge of the disease, and the improvement he had brought forward in the manner of treating it.



OF
STRICTURES, &c.

CHAPTER I.

OF STRICTURES IN THE URETHRA.

I PROPOSE in the following pages to consider the common mode of treating strictures in the urethra ; to point out cases in which that method is not found to answer, and recommend a practice which, in those instances, affords a more favourable prospect of success.

It will be necessary ,before I attempt to fulfil any of these intentions, to explain the nature of the disease itself, and distinguish it into different stages ; since there is not any mode of treatment which can be equally applicable to recent strictures, and those that have been of long standing.

Concerning the nature of this disease, I shall not be able to add much to what has been published by the late Mr. Hunter; and it was indeed originally my intention to have referred the reader to his work. This, however, upon consideration, appeared liable to many objections. I saw an evident impropriety in not laying before the reader at one view, both the observations and practical remarks I have to offer, and the data from which they were deduced; and this became the more necessary, as it is not my intention to go at large into the subject of strictures, with all the consequent diseases detailed by Mr. Hunter; but only to consider it so far as connected with the mode of treatment commonly received, and that which I am desirous to recommend.

In explaining the nature of strictures, I shall confine myself wholly to facts; and shall not venture to take notice of

any that have not come immediately within my own knowledge. If at the same time cases recorded in Mr. Hunter's work are mentioned, they will be only those, with which I had an opportunity of making myself perfectly acquainted.

SECTION I.

OF THE NATURE OF THE MEMBRANE, IN
WHICH THE STRICTURES ARE FORMED.

THE internal membrane of the urethra in men, lines a canal which is destined to convey two very different fluids, the urine and the semen ; and in very different quantities. When the urine passes, the canal is large ; when the semen is thrown out it is small, the membrane having a power of adapting itself to these two different states ; and this power of action within itself, is similiar to muscular contraction and relaxation.

It may be difficult, and perhaps impossible, to prove this membrane to be muscular, either from its appearance, or from examination of its texture, since the peculiar structure, upon which the

motion of a muscle depends, has not as yet been ascertained. I shall therefore content myself with observing, that other structures, apparently membranous, and equally unlike the fasciculated fibrous texture commonly met with in muscles, are endowed with irritability, producing contraction and relaxation, in a much greater degree than is ever found to take place in the membrane of the urethra. The *Tænia hydatigenia ovalis*, an animal consisting of a semi-transparent membranous bag, met with in the brain, liver, and omentum of sheep, when taken from its natural situation, and kept in tepid water, contracts and relaxes the different parts of its bag to a considerable extent.

That the membrane, which forms the lining of the urethra, does contract when irritated, may be illustrated by a variety of instances, both in health and disease. In hot weather the urine contains a greater proportion of salts, from an un-

usual quantity of the watery parts of the blood being carried off by perspiration ; and the stream is rendered smaller than common, by the irritating quality of the urine producing contraction in the internal membrane of the urethra. When a portion of this membrane is in an inflamed state from gonorrhœa, its surface is so extremely irritable, that the urine, even when diluted, by the patient taking watery fluids frequently into the stomach, causes it to contract so much, that the urine passes only in drops, or a very small stream ; in this state of the parts, if the penis be immersed in warm water, the irritation is so much abated while in that situation, that the membrane of the urethra frequently becomes relaxed, and the water passes more freely. After the inflammation of gonorrhœa is gone off, and stimulating injections are used, with a view to stop the discharge which remains ; in many instances where the in-

jection is of a very irritating nature, it will not pass on towards the bladder, but produce so strong a contraction in the membrane as entirely to obstruct its course, and frequently reject it altogether with considerable velocity.

This power of contraction is common to the whole canal, and as the bladder is the only antagonist muscle, when the contracted state has once taken place, it must continue, till counteracted by that viscus expelling its contents, and forcing open the passage. This is the natural and healthy action of the membrane of the urethra; but like every other muscular structure, it is liable to be affected by spasm, which produces a degree of contraction beyond what the parts will readily admit, and they lose the power of relaxing by any means whatever, till the spasm shall be removed. When this happens it constitutes disease, and is termed a spasmodic stricture.

The membrane of the urethra is extremely irritable, and any irritation produced upon a particular spot, will in many patients, be communicated over the whole canal; this state of irritation sometimes follows upon the discharge being checked in the early stage of gonorrhœa, by means of irritating injections; and will last for weeks; at the end of which period there will be little or no abatement; afterwards it may perhaps, quite suddenly go off. This, though it differs in many respects from common inflammation, and does not give the same kind of pain to the patient, may be considered as a slighter effect of inflammation.

The great degree of irritability which is peculiar to the urethra, will be best understood by stating the effect produced on that membrane by the influence of the mind. If a person of much sensibility has had a suspicious connection, as sometimes happens in a state of intoxication, upon

coming to his recollection of the past, he takes the alarm of having received an infection ; the state of mind will sometimes actually produce a number of painful sensations, and shooting pains in the membrane of the urethra ; all which shall go off, as soon as he is told the time is elapsed in which there was any danger of gonorrhœa.

This effect is so common, that multitudes must have experienced something like it ; but the degree is ever proportioned to the state of mind. In one instance of a young gentleman, whose situation was of a delicate nature, and whose feelings led him to consider that his being discovered to have such a complaint, might be absolute ruin to all his future prospects, the symptoms of irritation that were brought on by this apprehension were so violent, as to deprive him of rest for several nights, not from mental reflections only, but from the painful

sensations in the urethra attended with fever ; all which were abated by opium. It proved that no infection had been contracted, and in a little time the alarming symptoms altogether ceased.

SECTION II.

OF SPASMODIC STRICTURE.

ALTHOUGH no part of the urethra, from the orifice at the glans penis to the prostate gland, is exempt from the disease, it is by no means equally frequent in every part of the canal. Strictures occur more commonly near the bulb of the urethra ; the situation next in order of frequency is about three inches from the orifice of the glans ; they do occur sometimes almost close to the external orifice, and are even met with in the membranous part, near the prostate gland ; but these must be considered by no means as common cases.

When once a stricture is formed in any part of the canal it produces two effects, it renders the membrane of the

urethra in general more irritable ; and it prevents all that portion of the canal, between the stricture already formed, and the external orifice, from being dilated to its usual extent ; and consequently deprives it of its natural healthy actions. Under these circumstances this part is more than any other liable to the disease.

This is so perfectly true, that where the original stricture is near the bulb, and is of long standing, there is almost always another formed about three inches from the external orifice ; and therefore whenever a stricture is met with in this last situation, if the symptoms have been of some years continuance, there is reason to consider it as only the consequence of one, which has been formed nearer the bladder.

Strictures in the urethra have been generally considered, to arise from some new formation of parts taking place in the

canal, in consequence of disease; and have been supposed to have their origin in a previously distempered state of the membrane, either from gónorrhœa itself, or the effects of some violent application made use of in the treatment of that disease.

From what has been said of the internal membrane of the urethra, it will appear evident that a constriction of any particular part of the canal, may be brought on by an unusual or preternatural degree of action in the membrane itself, without any new formation whatever; and therefore when this is the case the complaint may be considered as a diseased action of natural parts, which may be brought on by a variety of causes.

In some constitutions the natural disposition for contraction in this membrane may be so strong, as to take place at a very early age, and in consequence of a degree of irritation so slight, as not to have been noticed; instances of this kind

at ten years of age, and at fourteen, have come within my own knowledge. In one of them, no cause whatever could be assigned; in the other, a small stone, in its passage from the bladder, had probably brought on sufficient irritation at the bulb to produce stricture, since after the patient's death a stone was found arrested in that situation.

I have at this time (August, 1795) under my care, in St. George's hospital, a boy only six years old, with a stricture in the urethra of three years standing. Upon examining the parts, I found two obstructions, one a little on this side of the bulb of the urethra, which admitted a very small bougie; another at the bulb, which was impervious to the bougie, but gave passage to the urine in drops, and in very small quantities at a time. The parents of the child said, that the disease was the stone, that a surgeon had sounded him a year and half ago, and felt a

stone in the bladder. Of this I had my doubts, as I considered the second stricture to be a proof of the first having continued a longer time than eighteen months, and in that case the sound would not have passed into the bladder. I sent to the surgeon, that I might learn the true history of the boy's disease ; but he was unable to recollect either feeling the stone, or sounding the patient. This I consider as sufficient ground for not believing he ever felt the stone ; since cases of stone at four years and half, are not so frequent, that in eighteen months one of them could escape entirely from the memory of the surgeon who had met with it. On the other hand, an unsuccessful attempt to pass a bougie would be readily enough forgotten.

The origin of this stricture we are unable at present to ascertain ; but if I were to form an opinion, from what I have been able to collect from other cases of

this disease, I should think a small portion of gravel more likely to have brought it on than any other cause.

We must suppose, that in general some previous irritation is necessary for the formation of a stricture, particularly when it takes place at a more advanced period of life ; and there is reason to believe that in many instances the inflammation in the venereal gonorrhœa, is the immediate cause of this complaint. It appeared to have been so in the following case.

A gentleman, twenty-five years old, who had resided many years in Spain, returned to this country, and almost immediately upon his arrival contracted a gonorrhœa. The urethra was extremely irritable, the inflammation very violent, and it extended itself over the surface of the glans penis and prepuce. Injections of milk and water gave pain ; mercury disagreed with his constitution, bringing on heat, uneasiness, and symptoms of general irri-

tation, so that it was left off. No local application that could be devised gave the smallest relief, even oil was unpleasant; but fresh cream was by accident discovered to have a soothing effect, and was the only thing used during the inflammatory stage, which lasted for three weeks. The discharge continued, and bark was given internally, but could not be persevered in, as it disagreed with the stomach. Steel also heated him. The balsam copaiva had the same effect: in short, no plan that was tried seemed to answer; they were therefore all given up. Two months after, the discharge still continued, and upon passing a bougie, it was discovered that a stricture had formed near the bulb of the urethra, which readily yielded to the use of the bougie, and in two months more the patient recovered.

Injectons have been charged with being the cause of strictures; but this is a point which it is difficult to determine.

For as a stricture frequently comes on after a gonorrhœa where no injection has been used, its appearance after a gonorrhœa cured by injection, cannot amount to a proof that this application contributed to the effect. It appears, however, highly probable, that where there is a disposition for stricture, injections may increase it; and I think the following case is one of those which have tended to give currency to that opinion.

A gentleman from the West Indies, twenty-three years of age, had a gonorrhœa, the symptoms of which were by no means severe; an injection of *saccharum saturni*, in the proportion of a scruple to eight ounces of water, was used, and made stronger as the symptoms abated: the discharge, however, continued, and after trying the bark, the balsam copaiva, and using the cold bath, for three months without the smallest benefit, I passed a bougie, and found that a stricture had

formed near the bulb of the urethra; this was cured by the use of bougies. From what has been stated, it must appear that irritations of different kinds upon the membrane of the urethra have proved the immediate cause of strictures; how far any one species of irritation is capable of producing this effect more readily than another, I am unable to determine.

Strictures resemble other spasmodic diseases, in being much more frequent in warm than in cold climates. They are met with in the East and West Indies, in a much greater proportion than in Europe; although gonorrhœa in those countries is far from being severe. *Not a fair*

Strictures are not peculiar to the urethra, a similar disease is sometimes met with in the œsophagus. This canal being required to be larger at one time than another, to adapt it to the different kinds of food that are conveyed into the stomach, is nearly under similar circumstances with

the urethra ; its internal membrane is probably also possessed of a muscular power which renders it liable to this disease.

Five cases of stricture in the œsophagus have come under my own observation. The patients were all above thirty years of age, and only one of them a man ; the four women were in other respects healthy, but had delicate and irritable constitutions. Two of the cases appeared to be principally spasmodic, and by the use of the bougie were so far relieved, that the patients were able to swallow with tolerable ease. In the other three cases there was a permanent contraction, which did not yield to the pressure of the bougie, but on the contrary had its symptoms increased by using it. The patients lived several years supported by liquids, dragging out a painful existence, till overcome by violent attacks of irritation, which the disease brought on, they died.

I had afterwards an opportunity of inspecting the parts, and found in each a stricture formed by the contraction of a transverse fold of the internal membrane of the œsophagus, exactly behind the lower edge of the cricoide cartilage. In two of the cases the orifice of the stricture would admit a crow quill; and in the third a goose quill could be passed through it. The disease was wholly confined to this septum, and scarcely exceeded the tenth of an inch in thickness. The internal membrane, both above and below the stricture, was more than usually vascular, but free from any appearance of disease.

In the commencement of the disease, a stricture in the urethra is seldom discovered by the patient; the only symptom it produces being a diminution of the stream of urine; which cannot be ascertained unless the patient has attended to the natural size of that stream, which is

hardly ever the case. The disease is therefore unknown, till the expulsion of the urine is attended with difficulty, and this seldom happens till the contraction has been of some standing, and has made considerable progress; but when the mind of the patient has once taken the alarm, and the nature of the complaint is explained, he becomes enabled to recollect several circumstances, to which he had not before attended, and to trace the disease nearly to its origin.

According to information, in this manner collected by patients, the first progress of the contraction is in general very slow; but when once it has so far increased, as never to be wholly relaxed by the force of the urine, its subsequent advances are more rapid, and new symptoms are perceived. The urine is voided more frequently, and a straining to throw it out continues after the bladder is emptied. If the patient accidentally

catches cold, drinks a glass of spirituous liquor, or commits an excess in drinking wine, the urine will perhaps pass only in drops, or be entirely obstructed; these causes inducing in the contracted part a spasmodic action, by which it is closed up.

When these last symptoms occur, and a stricture has not been previously known to exist, the disease is not unfrequently taken for an inflammation on the neck of the bladder, and treated accordingly; but the symptoms not yielding to internal medicines, and an absolute necessity arising to draw off the urine, the attempt to perform that operation by a catheter discovers the true cause of all the symptoms.

In this stage of a spasmodic stricture it is very liable to be affected by an action of the parts, which, I believe, is very little suspected. When this happens, both

the patient and surgeon are misled, and the disease is very improperly treated.

The action alluded to, is that which takes place in the membrane of the urethra during copulation, to reduce the size of the canal, and fit it for throwing out the semen with the necessary velocity; in doing this it sometimes also increases the stricture. This does not, however, so often happen, unless the action of the coitus is repeated two or three times at short intervals, or when, from the inability of the person, it is protracted beyond the common period. Under these circumstances, the membrane is kept a long time in a state of contraction, and the part disposed to stricture becomes inflamed, spasmodically affected, and loses the power of relaxing again; the passage is not completely closed, but very much narrowed at this part, and remains in an extremely tender state, so as

to be irritated by the urine passing through it; and in a few hours a discharge comes on. In some instances, and those not a few, the contraction in the stricture, at the time of the orgasm is so great, as altogether to stop the emission of the semen, and force it back into the bladder; in others, it passes through the stricture, but with little or no force.

A gentleman in the act of copulation, felt, at the instant the emission should have taken place, a considerable darting pain in the urethra, but no emission; and found a few drops of blood upon his linen. About an hour after, he had occasion to make water, and in preparing to do so, the semen, which should have been emitted, appeared upon his linen in considerable quantity. I was consulted upon the cause of such very unusual and distressing circumstances. On hearing them stated, I in-

formed him there must be a spasmodic stricture in the urethra, which alone could explain what had happened. This he was inclined to doubt, as he made water very well; but upon passing a bougie, an obstruction was met with near the bulb of the urethra, and upon allowing the bougie to remain, with a slight pressure against the stricture, for a few minutes, it was capable of being passed on to the bladder.

The discharge and pain in making water brought on, under the circumstances abovementioned, at a time when no previous disease is known to exist, and most commonly after a connection between the sexes, that leaves a suspicion upon the mind of the probability of infection, are naturally concluded to be the symptoms of gonorrhœa; from which, however, they very materially differ. They come on a few hours after the act, the degree of inflammation is very small,

the discharge is one of the first symptoms, which are all as violent at their commencement as at any other period, and in general more so. They begin in a day or two to subside, leaving nothing but the discharge, and that also frequently disappears in five or six days; whether any means are employed or not for its removal. These differences are so strongly marked, that if the attention of the surgeon is called to them, there is little danger of his being mistaken in his opinion. The mistake, indeed, is often made, not only with impunity, but even greatly to the credit of the surgeon, raising him high in the opinion of his patient for his skill in curing gonorrhœa; yet it is often attended with serious consequences; for the use of irritating injections, intended to stop the discharge, sometimes brings on a state of irritation which is carried to an alarming

height, and continues for a considerable time.

13 A gentleman, seventy years old, had a connection with his own servant maid, of whom he had no cause of suspicion, respecting infection; but finding in the morning a discharge and pain in making water, he concluded it to be venereal, and applied for assistance to a surgeon, eminent in that branch of surgery, and in a week found himself perfectly well. He now ventured upon a second connection, and in the morning had a return of his complaint; upon which he applied to me, relating all the circumstances, to know if his case could be venereal. I had little difficulty in declaring, that neither of the complaints had been so, but had been occasioned by a stricture; which, upon examination, proved to be the case; and the stricture, although it had never been dis-

covered, was so far advanced as to require the use of the bougie for several months to dilate the passage to its natural size.

SECTION III.

OF PERMANENT STRICTURES.

A PERMANENT stricture is nothing more than the spasmodic stricture, described in the last section, in a more advanced stage, where the contraction has so established itself, that at all times the seat of the stricture is narrower than the rest of the canal. It still, however, possesses the power of contracting and relaxing; in the contracted state, entirely closing up the passage; in the relaxed state, allowing the urine to pass through it in a small stream.

In this state of things, the spasmodic contraction, upon any irritation being applied to the part, is very great; and acts with considerable force. This is known by passing a small bougie through the

stricture, which in its relaxed state offered no resistance ; but after a few minutes not unfrequently contracts upon the bougie, and grasps it, making so much resistance, that when it is attempted to be withdrawn, some force is required to overcome it. The bougie when examined has an indented mark upon its surface, exactly resembling the impression of a piece of thin packthread tied round it.

When a stricture in this stage is examined in the dead body, it has the appearance of a membranous septum crossing the canal, with an orifice in the centre ; the membrane itself being not thicker at the edge of the orifice, than common writing paper. It sometimes happens that the contraction is not equally all round, but more on one side than the other, and the orifice not exactly in the middle ; in other respects the appearance is the same.

A stricture in this state impedes the passage of the urine in a degree, every time an attempt is made to evacuate it, and the force with which the urine is impelled against the stricture by the action of the bladder, is also increased according to the resistance ; producing irritation in the stricture, and giving it a stronger disposition to contract ; so that in this way the canal is in time rendered entirely impervious at that part.

As the evacuation of the urine is necessary for carrying on the functions of life, this last stage, or complete obstruction cannot take place without destroying the patient, unless another outlet is formed ; complete strictures are, therefore, only met with where there are fistulæ in perinæo. By their means an artificial passage is formed for the urine, but it is so imperfect as not to take off the irritation at the stricture ; which is still kept up by the urine pressing against it.

I thought it necessary to give this general account of the progress and appearance of strictures; that the different modes of treating them, which I propose to notice, may be the better understood. I have done it as briefly as possible, and the greater part of what I have stated is sanctioned by Mr. Hunter's authority, and confirmed by my own observation.

It is proper to mention, that there are still many surgeons of eminence who retain the opinion, that other causes of obstruction to the passage of the urine often occur, which are mistaken for strictures; these are caruncles or excrescences from the membrane of the urethra. To say that such affections of this membrane seldom take place, may appear to some a rash position; I need only mention that I have never met with them; and were they of frequent occurrence, I must have been peculiarly unfortunate to

miss them ; having had frequent opportunities of inspecting the appearances of this disease in the dead body.

There is a circumstance met with in all strictures of long standing, which I have already endeavoured to explain, and which may have given rise to the opinion of caruncles existing in the passage. The circumstance I allude to, is the anterior part of the urethra becoming irregularly contracted ; and so irritable, that an attempt to pass a bougie brings on a spasmodic increase of its contraction. When this is the case, the bougie gives the sensation of passing over little eminences, or forcing its way through soft parts that obstructed it ; and when this is attended with hemorrhage, the idea of having broken down some fungous excrescence is very much strengthened ; while, in fact, all these impediments arise from the irregular contraction, and irritable state of the membrane ;

and when the canal is a little more dilated they are no longer met with.

It was not my intention to say anything of caruncles ; but as many cases of strictures, in which they are supposed to be present, are considered improper for the use of the bougie, I thought it right to endeavour to remove this prejudice.

CHAPTER II.

OF THE TREATMENT OF STRICTURES.

IN the foregoing account, I have noticed only the symptoms and appearances which occur in the different stages of strictures, so far as they are necessary to assist us, in our treatment of the disease, by means of local applications.

The applications made use of, for the removal of strictures, are employed with two different intentions; to bring back the contracted part to its original state by dilating it, or to destroy it. For the first of these intentions, the bougie is the instrument in general use. For the second, besides the bougie, the application of lunar caustic is also recommended.

It has hitherto been thought adviseable, that recourse should be had to this last mode of removing the obstruction, where a bougie could not be passed through the stricture ; in all other cases, that the cure should be completed by dilatation.

As these observations will be confined entirely to the treatment of those strictures, which admit a small bougie to pass into the bladder, it will be necessary to consider, whether that instrument is, in such cases, always capable of effecting a cure ; and what are the disadvantages attending its use ; before any other mode of treatment is proposed ; after which I shall recommend the caustic, and give my reasons for preferring it, in many cases, to the bougie ; both as less painful in the application, and more permanent in its effects.

SECTION I.

OF THE USE OF THE BOUGIE.

THE bougie is, I believe, in common use among surgeons, for the cure of strictures; and all other means are generally considered as very inferior in their effects.

In the earlier stages of the disease, where the membrane of the urethra is not in a very irritable state, recourse is had to the bougie with every advantage; and if the stricture admits so readily of dilatation, as to allow the constricted part to be in a few weeks enlarged to the common size of the canal, a cure may be in this way effected. But as the dilatation resists only the effect, the same disposition, which induced the first contraction, may bring back the

complaint ; and a second, third, and fourth recurrence to the same mode of treatment may be required.

By this circumstance of the return of strictures after disusing bougies, which too frequently arises, several physicians, some of them very high in the profession, have been led to condemn them altogether ; conceiving, I suppose, that as they do not effect a perfect cure, they are of little if any service ; and, by their application to the internal membrane of the urethra, are injurious.

Whatever objections may be made to the use of the bougie, its effects are certainly more salutary than those of any internal medicine, usually exhibited in this disease. No internal medicine appears capable of stopping its progress, much less of producing even a temporary cure ; and these are evidently effects of the bougie. What degree of mischief is incurred by the membrane of the ure-

thra, it may be difficult to ascertain ; but certainly not any which is not more than counterbalanced by removing the irritation the stricture produced, so long as it impedes the passage, in every effort to discharge the urine.

The injury which this passage is supposed to receive from a bougie being long applied to it, I consider to be entirely a deception. We have no fair opportunity of determining this, in cases of stricture, because a diseased state of the canal when met with, may with more propriety be attributed to the stricture, than to the application ; I am therefore unwilling to admit conclusions drawn from such cases, as it is the healthy membrane, not the diseased, the bougie is supposed to injure. The information we receive upon this subject, in cases of diseased prostate gland, where the urethra is in a natural state, is more satisfactory ; and in one instance, a flexible gum catheter was in

constant use for five years; nor was it removed in all that period for more than a few hours at a time. When the parts were examined after death, the membrane was found in a natural state. I could adduce, were it necessary, several facts of a similar nature; but none where the application had been so long continued.

As the bougie is required only to act mechanically as a wedge, one of its most important properties is smoothness, to allow it to pass through the stricture with all possible facility.

With respect to the bougie, two points are principally worthy of attention; the one is that it should be gradually enlarged till it has dilated the stricture, as nearly as possible, to the full size of the passage; the other, that when this effect has been produced, its use should be continued for some time, to destroy, as much as possible, the acquired disposition of the part to contract.

If the former caution be not observed, this part of the canal being more pressed upon, in the passing the urine, than the rest, will not acquire its natural easy state, but suffers a repeated irritation, which is likely to bring back the stricture ; whereas if the seat of the stricture is upon a plane with the general surface, the urine in its passage will tend to keep it dilated, and thus establish the cure.

The necessity of removing the cause, as well as the effect, of a diseased state, sufficiently authorizes the second rule.

Were we always consulted in the early stages of stricture, the bougie would be liable only to one objection, that of not producing a permanent cure ; but partly from ignorance of the nature of the complaint, and partly from an unwillingness to expose any defects in these parts till it cannot be avoided, application to the surgeon is seldom made, till a considerable progress of the disease has put it less

within the power of the bougie to give relief.

When the stricture to be removed is of some years standing, as must be always the case when it has originated in the East-Indies, it does not admit of being readily dilated, nor does it bear, for any length of time, the application of the bougie; and any attempt to render the dilatation more rapid, or to continue the use of the bougie, beyond the time in which it lies quiet in the urethra, brings on symptoms of an irritable urethra, such as spasm, strangury, and abscess in perinæo. These symptoms sometimes appear singly; but I have more than once met with all of them in the same patient. In these cases the bougie will not do more than prevent the increase of the complaint, since it cannot be persevered in so as to effect a cure.

Where there are several strictures in the same urethra, we have sufficient evidence

that there must be more than common irritability in the membrane lining the canal, which is a circumstance unfavourable to the use of the bougie; and in such cases we find the common bougie cannot be retained even for a few minutes; while those of a milder nature, can be kept in without pain for an hour. Bougies which have preparations of lead in their composition, have an advantage here; but when made of wax and oil simply, they answer better than when made of harder materials.

In such cases the number of strictures, and the irritability of the passage, make it almost impossible to succeed in dilating the whole of the canal with the bougie; the time required to overcome all the obstructions, being longer than the passage can admit of its application, without being irritated by it; and till the last stricture, or that nearest the bladder is acted on, there can be little abatement of the symptoms.

In consequence of these different disadvantages, strictures of long standing become very unfavourable for the use of the bougie, and are only palliated by it, not cured. By perseverance for months, a bougie, about one half the size of the canal, is made to pass easily into the bladder; but all attempts to introduce one of a larger size are vain. The patient in this state makes water without difficulty; but if the bougie is left off, in less than two months, the contraction, which had never been wholly removed, begins to increase, and requires again to be dilated.

SECTION II.

THE MODE OF USING THE CAUSTIC.

IF the bougie is found inadequate to the cure of stricture, in many cases, where it can be passed through the contracted part, it will be readily admitted, that the chance of success in those cases where it cannot go beyond the stricture, must be still smaller. It has been recommended, to press the end of the bougie against the stricture, and by producing ulceration, remove the disease. This may have succeeded in particular instances. These, however, I am convinced, are not many in number ; and the danger of making a false passage, forms a strong argument against this mode of practice.

This is carried still further by some surgeons, who make use of a silver ca-

theter, to increase the pressure, and more effectually produce ulceration. Where this practice does not succeed, it appears to do harm, by exciting in the parts a disposition to become still more callous, to resist the pressure, and thus increase the disease it was meant to remove.

In those cases that are wholly imperious, or where the orifice is so small that the end of a bougie cannot be made to pass through it, Mr. Hunter proposed to destroy the stricture by caustic. He was led to this from the appearance of the parts, when examined after death; the thinness of the membrane forming the obstruction, making it highly probable that a few touches with lunar caustic would destroy it.

The success attending this practice, and the instrument he made use of to convey the caustic to the stricture, are in the hands of the public. But as that mode has been since found capable of great improve-

ment, I shall mention the objections to the method that is published; and explain the mode he afterwards adopted and used, for several years before his death.

The instruments Mr. Hunter invented for passing the caustic, consisted of a silver canula, and a stilet; one end of the stilet had a small bulb, that filled up the end of the canula, and made it pass more easily down to the stricture; the other end was a portcrayon, that contained the piece of caustic to be passed down through the canula, and applied to the stricture as long as might be thought necessary: the portcrayon then being guarded within the canula, the whole was withdrawn.

This method was found in practice to be liable to several objections. The silver canula could not be adapted to the flexible canal of the urethra, through which it was to pass; when therefore the caustic was applied, and any degree

of pressure made use of, the effect of the caustic was necessarily produced upon the angle, between the stricture and the side of the urethra, and not in the middle of the stricture, the part intended to be destroyed. In consequence of its being thus applied, the side of the urethra was liable to be injured; and where that did not happen, the orifice made in the stricture was often made obliquely, and could not always be followed by a bougie; so that the effect of the caustic was only to be judged of, by the increased stream of urine, as the bougie could not pass, either to ascertain the size of the aperture, to enlarge it, or prevent it from again contracting. The unyielding materials of the canula were attended with another disadvantage; for in many urethras, those particularly which require the application of the caustic, the internal membrane is so irritable, as not to admit a hard body passing along it with-

out inducing spasm, while a softer substance gives no uneasiness ; the silver canula was often prevented, by the degree of irritation it produced, from reaching the seat of the stricture ; and sometimes when it had been carried down to it, was not allowed to remain there ; so that a doubt very often occurred, whether the caustic was really applied to the stricture or not.

This fact of the urethra not allowing a hard substance to remain in it, cannot be better illustrated, than by mentioning the effect of the wire bougies ; so named from having a small wire in their centre to give them firmness. These are to appearance exactly like other bougies ; but when passed into the bladder of a patient, with an irritable urethra, he will generally, from the sensation, discover that they contain a wire, and is unable to allow one of them to remain in the passage. I was very much struck with the

exquisite sensibility of this membrane, in a patient on whom I passed one of these bougies, which was accidentally among the others without my knowledge. The patient immediately said, the pain was not to be borne, for there was a wire in it: I declared there was not. ^{He} ~~P~~ ^{was} still persisted, and said that he could not be mistaken. Upon withdrawing the bougie, and examining it, I found the wire.

The state of the urethra being such as to allow a bougie to pass, and at the same time not to admit a metal instrument, is not peculiar to this disease; but appears to take place, whenever the passage is much irritated, without having a reference to the particular cause of irritation. It not only occurs where the membrane of the urethra is the immediate seat of the disease, as in gonorrhoea; but when it is affected by sympathy, the disease being in the bladder. The following cases are instances of this.

A patient who had a gonorrhœa and chordee, by catching cold, brought on a ~~suppression~~ of urine: ineffectual attempts were made to empty the bladder, by means of the silver catheter; the flexible bougie, inclosing a metallic canula, was also several times made use of, but could not be passed. After remaining twenty-seven hours without making water and in much pain, the patient was brought to town, a distance of ten miles, and arrived in a state of great irritation: the flexible gum catheter was immediately introduced into the bladder, without the smallest difficulty, and drew off three pints of urine.

The surgeon who accompanied the patient, expressed his astonishment at the readiness with which the instrument passed; as the hollow bougie, covering a metallic canula, which he had brought with him, was of the same size with that of elastic gum, and he had never before

heard of the one possessing any advantage over the other.

A gentleman had the symptoms of an irritable bladder and urethra, supposed to arise from a stone: attempts were made at different times to ascertain the nature of the disease, by sounding him; but no solid instrument could be passed, while a bougie of a middling size went on to the bladder. The case was now considered as a spasmodic stricture, and the bougie recommended. Under this course the complaint grew worse, and the desire to make water came on every five minutes. A flexible gum catheter was now introduced into the bladder, and retained there two days; after the passage had been accustomed to the flexible catheter so long a time, a sound of the same size passed with little difficulty, and a stone was very distinctly felt in the bladder. The irritation from the stone had so much increased the irritabi-

lity of the urethra, as to make it contract whenever the sound was introduced into it.

This will account for the difficulty which often occurs, in passing the staff in the operation for the stone, and is sometimes hardly to be got the better of.

These objections to the use of the silver canula, could not escape Mr. Hunter's penetration. He not only saw them, but devised a mode, by which they may be avoided, and the application of the caustic rendered much more simple; at the same time that it is directed with great accuracy to the centre of the stricture.

This improved mode of applying the caustic is thus managed: take a bougie, of a size that can be readily passed down to the stricture, and insert a small piece of lunar caustic into the end of it, letting the caustic be even with the surface, but surrounded every where laterally by the

substance of the bougie. This should be done some little time before it is required to be used; for the materials of which the bougie is composed, become warm and soft by being handled, in inserting the caustic; and therefore the hold the bougie has of the caustic is rendered more secure, after it has been allowed to cool and harden. This bougie so prepared, is to be oiled and made ready for use; but previous to passing it, a common bougie of the same size is to be introduced down to the stricture, to clear the canal, and to measure exactly the distance of the stricture from the external orifice; this distance being marked upon the armed bougie, it is to be passed down to the stricture, immediately upon the other being withdrawn. In its passage the caustic is scarcely allowed to come in contact with any part of the membrane, the point of the bougie, of which it forms the central part, always moving

in the middle line of the canal ; and indeed the quickness with which it is conveyed to the stricture, prevents any injury to the membrane, where it is accidentally brought to oppose it. In this mode the caustic is passed down with little or no irritation to the lining of the urethra ; it is applied in the most advantageous manner to the stricture, and can be retained in that situation, the necessary time to produce its effects.

This method Mr. Hunter adopted several years before his death, in preference to that which is published in his Work ; and I have continued to make use of it ever since, nor have I in any case found it attended with disadvantage. I have mentioned it publicly, for these last two years in my lectures, and explained the manner of passing it.

By this mode of arming the bougie, strictures in the membranous part of the urethra may have the caustic applied to

them, which cannot be done by a silver canula, unless made flexible ; and even in that state it is liable to many objections.

SECTION III.

THE USE OF THE CAUSTIC TO DESTROY
THE STRICTURE, AND REMOVE THE DIS-
POSITION FOR CONTRACTION.

THE application of the lunar caustic to strictures was introduced into practice by the late Mr. Hunter, in those cases only that did not admit the smallest sized bougie; in which, therefore, no mode of relief, without having recourse to a very severe operation with the knife, was at that time known. Under these circumstances, if it relieved the symptoms of stricture, and procured a freer passage for the urine, it was certainly a valuable discovery.

This practice has, however, been objected to, and many bad consequences have been attributed to it, which it cer-

tainly does not produce ; for whatever *a priori* might be supposed the effects of such a violent application, to a membrane so sensible and irritable as the urethra ; and I will admit that it is very natural to conceive, that they would be very severe ; the result of experience, the only thing to be relied on, evinces the contrary. The pain that is brought on is by no means violent ; and neither irritation nor inflammation are found to take place.

That cases do occur, in which a stricture has produced so much mischief, and so great an extent of the canal has become diseased, that the caustic has proved unsuccessful, is certainly true ; and several of these cases have fallen within my own knowledge. But when it is stated that none, even of them, are made worse by its use ; that no bad consequences attend it ; and that no other mode, at present generally known, is

so efficacious ; this occasional want of success, cannot be considered as an objection to the mode of practice.

In answer to the violent effects apprehended from the use of the caustic, it may not be amiss to contrast them with the operation in use, where a bougie does not succeed.

In those cases we are obliged to have recourse to means still more severe and violent, laying open with the knife the diseased urethra, and passing through the divided parts a flexible gum catheter into the bladder. This I have done myself, and have frequently seen performed by Mr. Hunter, and it always succeeded ; neither bringing on so much inflammation as was expected, nor being attended with any symptoms of irritation. This practice has by other surgeons been carried still further ; the portion of diseased urethra, has been dissected out and entirely removed, nor has so severe an operation brought on any

untoward symptoms, and the patient has recovered.

If the membrane of the urethra when diseased, is capable of suffering so much injury, without any consequent symptoms of irritation ; it cannot be doubted, that it will bear with impunity to be touched, in a very partial manner, several different times with lunar caustic.

As the following observations are made with a view to extend the use of the caustic to a greater variety of cases, and in some measure upon a different principle from that upon which it has been applied to impervious strictures, by the late Mr. Hunter ; I thought it necessary, before I made known my own opinions upon the subject, to mention the source from which they were derived ; and to place the merit of the invention, as well as of the mode of applying it, where it was due ; reserving to myself all that I have a right

to, an attempt to render it more generally useful.

Having met with a number of facts, from which a general principle appears to be established, that the irritable state of a stricture is kept up, and even increased, by the use of the bougie, but lessened and entirely destroyed by the application of lunar caustic ; I am desirous to communicate my observations upon these facts, and to recommend the use of the caustic, in many cases of spasmodic stricture, in preference to the bougie.

As the practice upon this principle, is, I believe, entirely new, it will require something more than general assertion, or mere opinion, to gain the attention of many of my readers, still more their belief ; I shall therefore detail the circumstances as they occurred, by which I conceive the propriety of this practice to be established ; and afterwards make some

observations upon the principle on which it depends.

For several years I have had, from my connection in practice with Mr. Hunter; opportunities of attending to cases of stricture in the urethra, in all their different stages; many of them brought on during a long residence in India, attended with great irritability, and exceedingly difficult of cure.

One case of this kind, which I shall presently relate, admitted the passing of a small bougie; but in the course of three years, very little was gained by a steady perseverance in the use of that instrument; which made me look upon the bougie as less efficacious than I had always been taught to believe it. I was willing, however, to consider this as an uncommon case, depending more on the peculiarities of the patient's constitution, than the nature of the disease; but found, on a particular inquiry, that several other

gentlemen from India were under circumstances nearly similar; the bougie only preventing the increase of the stricture, but unable to dilate it beyond a certain size; and whenever it was left off, in less than two months the disease had made considerable progress.

What plan was to be followed in such cases, I was unable to determine; but that the bougie could not be depended on was evident. During this suspense, the following case came under my care.

In August, 1794, a gentleman consulted me for some symptoms which had been considered as indicating the presence of gonorrhœa; but as they did not yield to the common treatment in the usual time, he was induced to take my advice respecting the nature of the complaint. In the necessary inquiry to obtain a perfect history of the case, among other things it was stated, that nineteen years before there was a stricture which

became very troublesome, and that Mr. Hunter, at his desire, had applied the caustic to it, by which the stricture was removed, and never after returned: he believed that he was one of the first persons on whom the caustic had been used. From this account I was naturally led to believe the stricture had gradually returned, and was now increased so much as to produce the present symptoms; a discharge being almost always a symptom of stricture when it is much contracted; but no stricture was met with, a bougie of a full size having passed on to the bladder without the smallest impediment. I therefore took up the case as an inflammation in the urethra; and large doses of the balsam copaiva given internally effected a cure.

The stricture having been removed nineteen years ago, and not returning, made a strong impression on my mind, and made me desirous of ascertaining

whether this practice could be employed with equal advantage, in cases of spasmodic stricture, and the cure produced by it equally permanent: a short time after, I had an opportunity of trying it in the following case.

A captain in the East India Company's service, in September, 1794, applied to me for assistance. His complaints were great irritation in the urethra and bladder, constant desire to ~~make~~ water, and an inability to void it, except in very small quantities. These symptoms had been at first supposed to arise from gonorrhœa, afterwards rendered more severe by catching cold. But not yielding to the usual remedies for gonorrhœa, they were investigated more minutely, and a stricture was discovered in the urethra. The mode of treatment was now changed, and the bougie employed: its use aggravated all the symptoms, and brought on so great a degree of irritability on the

bladder and urethra, that there was an alarm for the patient's life, which was the reason of applying for my assistance.

Besides the local symptoms, this patient had those of a quick pulse, white tongue, hot and dry skin, loss of appetite, and total want of sleep, with frequent attacks of spasm on the bladder and urethra. To relieve the bladder, a very small flexible gum catheter was passed through the stricture, and the water drawn off, in quantity about a pint, which gave him great relief; this was repeated morning and evening, to keep the bladder in as easy a state as possible; but in other respects he continued much the same.

As the present symptoms were brought on by the use of a bougie, little good was to be expected from that instrument; and where the urethra was so readily irritated, and disposed to continue in that state, there was a very bad prospect that the use of the bougie could afterwards

effect a cure. These circumstances I explained to the patient ; and mentioned in proof of my opinion, the case in which so little had been effected in three years. I then proposed to him a trial of the caustic, with a view to deaden the edge of the stricture, as the only probable means of effecting a cure. The degree of irritation was already great ; I was, however, led to believe that the application of caustic was not likely to increase it ; since by destroying the irritable part, it might lessen, and even remove the spasmodic affection ; but if, contrary to my expectation, the irritation continued, we still should be able to draw off the water, as the slough formed by the caustic would prevent the edge of the stricture acting with force, and obstructing the instrument.

The application of the caustic was, upon these grounds, determined on ; and it was applied in the following manner.

I passed a common full sized bougie down to the stricture, to ascertain its exact situation, and to make the canal of the urethra as open as possible ; the distance was then marked upon a bougie armed with caustic, and of the same size, which was conveyed as quickly as the nature of the operation admitted. It was retained upon the stricture, with a slight degree of pressure ; at first there was no pain from the caustic, but a soreness from the pressure ; in about a minute, a change was felt in the sensation of the part, it was at first a heat, succeeded by the burning pain peculiar to caustic ; as soon as this was distinctly felt, the bougie and caustic were withdrawn, having remained in the urethra about a minute altogether. The soreness, he said, was entirely local, by no means severe, was unaccompanied by irritation along the canal ; and he thought the uneasiness in the bladder diminished by it. He de-

scribed the pain, as resembling very exactly the first symptoms of gonorrhœa. This sensation lasted half an hour after withdrawing the bougie.

The caustic was applied about one o'clock in the forenoon, and he passed the day more free from irritation than he had been since the beginning of the attack, which had lasted six days. In the evening the water was drawn off with more ease than the night before. He passed a tolerable night, and the next day continued free from irritation. On the third day the caustic was again applied in the forenoon; the painful sensation was less than on the former application, lasted a shorter time; and in an hour after the armed bougie was withdrawn, he made water freely for the first time since the commencement of his indisposition. He said the irritation in the bladder was removed, and he felt very well. His appetite returned, he slept

well, and continued to void his urine with ease. In this state nothing was done till the fifth day, leaving always a day between the applications of the caustic. On this day a common sized bougie went readily into the bladder, it was immediately withdrawn, and the cure was considered as complete ; no bougie was afterwards passed, lest it might bring back an irritation upon the passage. I met this gentleman twelve months after, and he assured me that he had continued perfectly well.

From the result of this case, I was encouraged to hope, that the caustic might be applied to strictures in the urethra with more confidence than hitherto it had, since it evidently did not bring on or increase general irritation ; but on the contrary, seemed to allay it. In this case it had taken off the disposition to spasm, which appeared to me, as I have already stated, an object of the greatest impor-

tance in the treatment of spasmodic stricture in all its stages. But one instance by no means afforded sufficient evidence, to establish the general propriety of the practice. It justified, however, further trials upon this subject, and induced me to prosecute the inquiry.

The case I have already alluded to, as having discouraged me more than any other in the use of the bougie, appeared to be a very proper one for the trial of the caustic, and for comparing its effects with those of the bougie, particularly as it had been of very long standing, and the bougie had been persevered in with great patience, for a sufficient length of time, without any considerable benefit. I had an opportunity of trying it, and shall therefore state the whole case here, rather than give it in detached parts.

The gentleman was a lieutenant-colonel in the East India Company's service, forty-two years of age, had been many

years resident in India, and during twelve of them had more or less of difficulty in making water. He came to England in 1791, and put himself under the care of Mr. Hunter. Upon passing a bougie, there were found to be two strictures in the urethra, one three inches from the external orifice, the other at the bulb. The canal was extremely irritable, and a bougie, if allowed to remain in it for several minutes, produced uneasiness. The first stricture was, after a considerable time, gradually dilated; and then a small bougie was passed through the second into the bladder; after this had been continued daily, a few minutes at a time, for about a week, one a single size larger was introduced. This larger bougie had been used for two days without any pain; but on the third the patient, immediately after it was withdrawn, walked nearly a mile; he felt a little uneasiness, which he attributed to the walk;

this was followed by a spasmodic irritation in the urethra and bladder, and in the evening a complete suppression of urine took place: in this state he remained all night, taking opium, and using other modes of relief, but without effect. About four o'clock in the morning a bougie was passed down to the stricture, and allowed to remain there, pressing against it. This application was continued for fifteen minutes; the spasm began to abate, allowing a few drops of urine to pass, and in four hours it went gradually off.

The bougie was now laid aside; some time after it was again tried, and things went on tolerably well for about ten days, when an uneasiness was felt in the perinæum, and a hardness discovered there, which made it necessary again to leave it off. This hardness increased, and formed a very large abscess in perinæo, which was opened. It contained about three ounces of matter, but had no

communication with the urethra, and in two months healed up. When the parts were perfectly recovered, as there seemed to be no alternative, the bougie was resorted to again; and as the common sort did not lie in the passage without giving uneasiness, those of a softer kind were tried, and found to answer better; but unfortunately whenever they were regularly persevered in, they brought on, in less than two months, a local irritation, attended with constitutional indisposition, which made it necessary to omit them for a week or fortnight. From these circumstances, at the end of three years, a bougie of no considerable size, composed of the softest materials, (white wax and oil in nearly equal proportions,) could only be retained for ten minutes, without irritation; but if used regularly longer than a month, irritation came upon the parts.

After having suffered so much under a

course of bougies, the patient was willing to make trial of the caustic ; and on the 20th November, 1794, it was applied to the stricture nearest the external orifice, which at this time did not admit a bougie of half the common size ; the effect of the caustic, after remaining a minute on the stricture, was local soreness, but no irritation ; the soreness continued a quarter of an hour, and then went off. The sensation was totally different, from the uneasiness he had always experienced while a bougie was retained in the stricture, and although more acute, was by no means so difficult to bear ; this was so decidedly his opinion, that as soon as the caustic was removed, from which he had expected very severe effects, he declared that he would at any time prefer the application of the caustic, to having a bougie passed through the stricture. It was applied again on the 22d, and produced the same effects in a less degree. On the

24th, a full sized bougie passed readily through the first stricture down to the second. The caustic was now applied to this stricture : after using it three times, with the interval of a day between each application, a full sized bougie could be pushed on to the bladder, but did not pass with ease ; the caustic was therefore used a fourth time, and then the bougie went readily into the bladder, and he made water very freely. Thus in fourteen days, by means of the caustic, a full sized bougie was passed into the bladder, without the smallest degree of irritation ; an object which could not be effected by dilating the passage with a bougie for three years together. As the urethra had proved to be so very irritable, it was not thought prudent to use a bougie, the parts were therefore left to themselves.

In the beginning of February, 1795, this patient caught cold and was confined

to his bed with fever, and symptoms of oppression upon the breast, from which his life was considered in danger. For these complaints he was twice bled freely, and otherwise much reduced; during the whole of this illness there was no return of his stricture, or irritation in the bladder; but while in the weak state in which he was left by it, on the 14th of Feb. he had in the night frequent desire to make water, which passed in small quantities, and towards the morning he had some irritation in the bladder. He sent for me, a good deal alarmed at this return, after having been ten weeks free from complaint. I saw him at eleven o'clock. On hearing his account of the symptoms, I objected to the use of the bougie, as it had always increased the irritation when employed. The application of the caustic to the stricture, appeared to me a preferable measure, since in its present contracted state, it would be more certainly

opposed to the caustic, and more effectually destroyed. This was immediately agreed to, and in five minutes after it was used the spasm went off, and he made water with ease to the quantity of half a pint, which emptied the bladder, and entirely removed the irritation. As the stricture had evidently in some degree returned, and as I consider that the only chance of a permanent cure depends on the contracted part being equally dilated with the rest of the canal, or nearly so, I was not satisfied with his making water freely, and returned to the use of the caustic, to procure so desirable an effect. It was again applied twice to the first stricture, and twice to the second; after which a full sized bougie could be passed readily into the bladder. As this return might be attributed to leaving the urethra entirely to itself, after the use of the caustic, it was now judged proper to pass a bougie once a day, five minutes each

time, for a fortnight, and then once a month, to ascertain the state of the canal. This gentleman has since returned to India; but at the end of four months I had an opportunity of passing a bougie, and at that time the stricture had not in the smallest degree returned.

From the result of this case, in addition to the preceding, I was satisfied in my own mind that I had discovered an effectual mode of treating those spasmodic strictures, which do not admit of being relieved by the use of the bougie; and since that time have had many opportunities of confirming by experience the success of this mode of treatment.

What has been already stated is to be considered more as the groundwork, upon which the practice was taken up, than as the result of it; and I thought I could not convey to others, more distinctly, the facts collected from these different trials, than by detailing the cases

in the order in which they occurred. Having done this, it remains to draw some conclusions from them, respecting the principle upon which the caustic produces this effect, and annex a sufficient number of cases, to show that the practice is in general successful.

SECTION IV.

TO SHOW THAT SPASMODIC AFFECTIONS,
IN GENERAL ARE BROUGHT ON BY
SLIGHT IRRITATIONS, AND NOT SUCH AS
ARE VIOLENT.

THAT the delicate and vascular internal membrane of the urethra should admit of a portion of its surface being destroyed, and no symptoms of any consequence be produced from this violent application, is so curious a fact, that it almost staggers our belief; and any one is excusable who at the first view may condemn this practice as unwarrantably bold. For this reason I have thought it my duty to be minute in detailing the proofs upon which this practice is built, in order to reconcile it to practitioners, and invite them to make trial of it. It is also ren-

dered more extraordinary by the circumstance of the most distressing symptoms coming on from very slight degrees of irritation to the same membrane.

Although at first we are unable to reconcile this to our minds, from being too strongly impressed with an idea of the delicacy and sensibility of the organs of generation, whose functions are so peculiarly under the influence of our imagination; yet if we divest ourselves of that influence, we shall find it perfectly conformable to the effects, that take place in other parts of the body, and to the general laws of sensibility and irritability.

It is a general fact, that wherever a slough is produced, there is less inflammation, both in degree and extent, than from any other injury of the same or even a less degree of violence. This is well known to all military surgeons, who are daily seeing illustrations of it; a bruise

from a spent ball shall bring on a violent inflammation over the whole limb; but if the same ball had passed with velocity, and gone directly through the limb, it would have acted like a caustic upon the surface to which it was applied; and destroyed the parts to a certain depth, producing no more inflammation than is necessary to separate a slough. This inflammation would have been slower in coming on, and almost wholly confined to the neighbourhood of the ball's passage. Is it then, we may ask, extraordinary that an analogous effect should take place in the membrane of the urethra, or is there more difficulty in accounting for it? The caustic deadens the surface it injures, and takes from it the power of conveying irritation; the surrounding parts therefore have only that degree of irritation induced upon them, which is necessary for the removal of the slough, which is very superficial and

extremely small ; but where death is not produced, and the natural actions of a part are disturbed, without its being destroyed, the symptoms of irritation may be carried to any degree, according to its sensibility and irritability.

A similar effect to this, upon the urethra, takes place on the tunica conjunctiva of the eye ; if a mote or hair gets between the eyelids and the eyeball, it shall sometimes bring on a violent degree of irritation, and the whole surface will inflame ; but this by no means is the case when the lunar caustic is applied to any part of the same surface, as may be illustrated by the following case.

A man about forty years old had a beginning film coming upon the edge of the pupil of one of his eyes ; this newly formed part was supplied with blood, by a plexus of vessels distinctly seen through the tunica conjunctiva :

with a view to destroy and obliterate these vessels, I applied the lunar caustic three different times to the tunica conjunctiva, about a quarter of an inch from the edge of the pupil; it gave him a good deal of pain, but brought on no general inflammation or irritation upon the membrane.

Spasmodic actions in general, are brought on by slight degrees of irritation, both constitutionally and locally, and are in general relieved by violent applications. The locked jaw, and other tetanus affections, are the consequences of wounds and fevers; but the time of their coming on, is when the wound has either not begun to inflame, or is in a healing state; and the fever, when they arise from that cause, is going off or entirely removed. The shock, from plunging into the cold bath, a very violent application, to the surface of the body,

has been found of advantage in this disease.

Spasms in particular muscles, as in the intercostals, diaphragm, muscles of the arm, or leg, come on from slight constitutional irritation, or local injuries attended with little violence; the cause is often so slight as entirely to escape discovery; and the treatment most generally found to succeed is blistering the surface nearest to the part affected, which is one of the most violent applications we are enabled to employ.

In surgery it is a fact too well ascertained to require any illustration, that local irritations are more commonly removed by stimulating dressings, than by those that are mild; and here they are applied directly to the part affected. Sores in different parts of the body too commonly become irritable, attended with extreme sensibility; and these symptoms

are often aggravated by poultices of bread and milk, preparations of lead or opium; but poultices of arsenic, or applications of caustic, to the whole surface, will in many cases give ease after being used some time, and in the end produce a cure.

This general principle of spasmodic affections and local irritation yielding more readily to stimulating applications, is now found equally applicable to affections of the urethra. This is not only true when the stimulating application is made to the part itself; but it also takes place in a less degree, when made to a neighbouring part; for the inflammation from gonorrhœa, in one part of the canal, will sometimes take off the spasm from a stricture in another part at some inches distance: the same effect is occasionally produced by irritating applications, although it does not usually follow. Of this I shall mention the following very curious instance.

A gentleman of fortune who had a spasmodic stricture was a considerable time under the care of Mr. Hunter, without receiving any benefit from the different modes of treatment, that were used for his relief: finding no benefit from the regular practice, as it is termed, he applied to a celebrated empiric, who examines the water of his patients, and in general discovers that they have had gonorrhœa, which according to his cant, has been too suddenly stopt, and from this virulent matter being locked up, proceed their present complaints, whatever they are. He therefore proposes to bring back the discharge, which is effected very ingeniously by passing a stimulating bougie three or four inches along the urethra; and after promoting this discharge for some time, he leaves off the use of the bougie, and the discharge soon disappears; the complaints either do, or should disappear along with it. This his com-

mon practice, was made use of in this gentleman's case of spasmodic stricture; he passed a bougie smeared with balsam copaiva, a few inches up the passage; and by this means had the good fortune to cure his patient; for the irritation produced upon this part of the membrane, took off the spasmodic action from the part nearer the bladder, and the patient got perfectly well.

SECTION V.

OF THE COMPARATIVE EFFECTS OF THE
BOUGIE AND THE CAUSTIC UPON STRIC-
TURES.

THE bougie, it has been already observed, in recent cases of stricture, is generally equal to the cure, and therefore no other means become necessary; and wherever the bougie is capable of dilating the urethra to its natural size, both from its being more simple, and less alarming to the mind of the patient, it is to be preferred.

Were the bougie capable of producing this effect, more generally than it is, there never would be occasion to have recourse to the caustic.

It is not my intention by any means to discourage the use of the bougie, which

is certainly a very useful instrument; but as the bougie is limited in its powers, to point out a more active application, capable of producing a cure where that would prove inadequate; therefore the more ordinary cases, that admit of a cure by the bougie, have not been stated, considering them as perfectly understood by every practitioner.

In comparing the effects of the bougie with those of the caustic, strictures only that have been of long standing are considered; and as has been already stated, either from ignorance or bashfulness, too many strictures in the urethra arrive at that state before any thing is done for their relief.

It appears from the observations which have been made, that many of these strictures admit a small bougie to pass into the bladder, but will not allow of its being gradually increased, so as to dilate the passage at that part to a tolerable

size ; in all such cases the cure cannot be effected by that instrument. This is so obvious that it cannot easily be denied.

There are also other cases in which there is less irritation than in those above alluded to, that admit of being dilated by the bougie to a certain degree, but never to the natural size of the canal ; the bougie is therefore left off, as no further benefit can be derived from its use ; and the patient as he can make water tolerably well, is supposed to be cured : but unfortunately in two months, or little more, the symptoms return, and the bougie must be again employed, which, after its application, leaves him only in his former state, and as liable to relapse as before. This cannot be considered even a temporary cure, it is only a palliative, for the stricture still exists, although in a less contracted state ; and the relapse is brought on most probably from the urine meeting with more resistance in going

through the narrow part, than the rest of the canal, which causes the part to retract, and in time become as much contracted as before.

In both these stages of the disease, where the stricture cannot be dilated by the bougie, and where the dilatation can only be carried to a certain extent, the caustic has a manifest advantage, being capable of doing what the bougie cannot do, namely, removing the stricture entirely, and making the canal of the same diameter, or nearly so, in every part. When this is effected, the urine in passing along the canal must press everywhere equally, and dilate the whole urethra to the same extent; and by doing this, will prevent, as much as possible, a return of the disposition for forming a stricture.

In this comparison of the effects of caustic with those of the bougie upon strictures, there is an advantage seldom

to be obtained in similar investigations ; which is, that both modes have been tried, in almost every instance adduced in favour of the caustic. The trials of the bougie have in general been made for a considerable length of time, by several different surgeons, and upon patients whose situation in life enabled them to do justice to the plan that was laid down for their relief. The conclusions which are drawn from the results, are therefore the more to be depended on. Upon the whole, in estimating the advantages of the caustic in the more advanced stages of stricture, I hope, from what has been advanced, we may safely infer that it is a mode of cure more extensively useful, milder, quicker, more effectual, and more permanent than the bougie.

CHAPTER III.

THE EFFECTS OF THE CAUSTIC ON STRICTURES, EXPLAINED AND ILLUSTRATED BY CASES.

BEFORE I proceed to the cases themselves, it may be proper to mention some general directions for applying the caustic, and the immediate effects it produces on the parts.

In arming a bougie, it will be attended with some difficulty to get the piece of caustic of a proper shape and size for the purpose, unless it is cast in a small cylindrical mould. In this state it is to be procured from Mr. Savigny, instrument maker, in King-street, Covent-Garden; and if these pieces are thicker than the bougie can readily inclose, by putting them in

water, the outside quickly dissolves, so as to diminish their size as much as is required. The piece of caustic so prepared, is to be cut into small portions, about the tenth of an inch in length, and an orifice being made in the end of a bougie, by the point of a dressing probe, the caustic is to be inserted into it, and the bougie rolled, so as to be made quite smooth; taking care that the edge of the caustic is every where covered, and only the surface at the end exposed. After the bougie has been thus prepared, the distance of the stricture from the external orifice, is to be marked upon it, and the passage cleared by a bougie, fully as large as that which is armed. It is then to be introduced into the passage, and applied to the stricture; and when it is found in contact with the obstruction, it is to be steadily retained there, with a moderate degree of pressure at first, and less as it is longer continued, since the bougie becomes soft by remain-

ing in the urethra, and readily bends, if the pressure is too great. The time it is to remain depends a good deal upon the sensations of the patient, and the length of time the parts have been diseased; but on the first trial it should not be for more than a minute, as it then gives greater pain than on any future application. The pain produced by the caustic is not felt so immediately as it would be natural to expect; the first sensation arises from the pressure of the bougie on the stricture; a little after, there is the feeling of heat, and then the parts become painful. As soon as the caustic begins to act, the surgeon who makes the application, is made sensible of it by the smaller arteries of the parts beating with unusual violence, which is very distinctly felt by the finger and thumb that grasps the penis.

The pain that is brought on by the caustic, lasts for some time after it is

withdrawn; but this period differs in almost every patient, being sometimes extended to half an hour, and sometimes only a few minutes. The kind of pain is heat and soreness, which is not severe, as it is not accompanied by a peculiar irritation, which renders pain most insupportable, and is too often brought on by dilating strictures with the bougie. After the caustic has been withdrawn, it is desirable that the patient should make water, as in that way any remains of the dissolved caustic are washed off; but it sometimes happens, that no water will flow at the first effort. When that is the case, it should not be urged, as it is not of any great consequence. It happens not unfrequently, that at the first time of making water, some blood passes along with it; this is also of no bad consequence, but is rather favourable; as when that has happened, the stricture usually proves to be so far

destroyed, that at the next trial the bougie passes on to the bladder. Every other day, appears in general to be as often as it is prudent to apply the caustic. I have, however, done it every day in very obstinate cases without any detriment.

In cases where, from long continuance of the stricture, there is so much induration that the caustic does not succeed; which sometimes happens; after ten or twelve applications the parts become so much accustomed to it, that it gives little or no sensation at the time it is used, but afterwards produces the same kind of irritation and irregular contractions in the urethra, that arise from too long a perseverance in the use of the common bougie; and whenever this takes place, I believe it should be for a time left off. This, however, is less applicable to strictures that admit of a bougie passing on to the bladder, than to those of a worse

kind, which are become so contracted, that a bougie of the smallest size cannot pass.

In cases of stricture, attacks of inflammation frequently come upon the passage after connection with women, and are mistaken for gonorrhœa. What tends in a great measure to confirm this mistake, is the circumstance of the greatest pain being felt near the orifice at the glans penis, and not in the seat of the stricture, where it would be natural to expect it. This must arise from that part of the canal being more sensible than the rest, so that when the inflammation extends over the whole, the feelings of this part are the most acute. In this state of the parts, when the true nature of the disease is discovered, the caustic should not be applied, for the pain is infinitely greater than at other times, is of longer continuance, and seems considerably to aggravate the inflammation along the canal. It does not, however, bring on

spasm or suppression of urine. It is more prudent to defer the application of caustic till the inflammation subsides, which it generally does in a few days.

That the cases may be more readily understood, I have divided them into those which admit of being removed in a short time:—those that are not in a favourable state for the application of the caustic:—and those which require a longer continuance of its use, to complete the cure. In the latter, the parts are sometimes found to become so irritable that the caustic cannot be uniformly persevered in till the cure is completed. In such cases it must be left off, till the parts have had time to recover from this state of irritability.

I may appear to have annexed a greater number of cases than was necessary; my reason for doing so, was to show that the opinions I have advanced were not hastily taken up; or brought forward to the

notice of the public before I had collected a sufficient body of evidence in their favour.

All the cases I have treated in this way are not mentioned; but those only are omitted, which had no particular symptom in the course of the disease, or the progress of the cure. On the other hand, I have been particularly attentive to state all those in which the disease appeared the least favourable to this mode of treatment, or the caustic produced effects unusually violent, or which in the end proved unsuccessful.

SECTION I.

CASES OF STRICTURE WHICH READILY
YIELD TO THE EFFECTS OF THE CAUS-
TIC.

THE following cases are not arranged in any particular manner. They are intended to illustrate the effects of the caustic on strictures in the urethra, in patients whose constitutions were dissimilar, as well as their ages; labouring under symptoms which varied from one another, and had very different periods of existence. For this purpose the facts themselves appeared to be all that were wanted; nor could they receive any additional value, by being placed in any one order in preference to another.

CASE I.

A gentleman, about forty-six years of age, who had resided many years in India, discovered a stricture in the urethra, which was treated in the common way by the bougie ; and as soon as the dilatation had been carried to the extent the parts would bear, the bougie was left off, and the patient considered to be cured ; he was, however, put upon his guard, that probably after some time there might be a return ; and whenever that happened, the bougie must be again employed. He found that two months was the longest time that the stricture remained in the state in which the bougie left it ; beginning after that period to form anew, and require assistance. He went on in this way for four years, before I saw him ; I proposed that he should endeavour to carry the dilatation further,

and bring that part of the canal nearer its full size, which I had reason to believe would make the returns less frequent. He did so; but found that little was to be gained beyond what he had before effected. In Dec. 1794, finding the bougie incapable of producing a cure, he consented to make trial of the caustic. It was applied in the manner I have already described, and gave pain almost immediately on being introduced; it was therefore only allowed to remain in contact with the stricture for a minute: the pain continued some hours, but was not severe. Next day some blood was discharged, and a degree of uneasiness was felt in the part. This made him suppose his case unfavourable for the use of the caustic; but on the following day, a full sized bougie passed readily into the bladder without any pain, nor producing the smallest degree of irritation; nothing more was done, and the parts were left

entirely to themselves. In May, 1795, five months after the application of the caustic, the same bougie was passed without meeting the smallest degree of resistance. In July, 1795, he had a severe attack of cold attended with fever, and during the continuance of the indisposition, there was a degree of tenderness along the membrane of the urethra; and the bladder did not admit of being distended to its usual size; these symptoms, however, all went off with the others, and in August the same bougie passed into the bladder as readily as before, and has continued to do so.

The bladder and urethra having taken on a state of irritation, in consequence of general indisposition; and recovering themselves without bringing back the contraction in the urethra, is a strong circumstance in favour of the disposition for stricture being in this case entirely removed.

By a full sized bougie, I wish to be understood, as large a one as can be passed with ease along the general canal of the urethra; and this passage in most patients will receive a bougie a good deal thicker than those that are in common use to prevent a return of the disease.

CASE II.

A gentleman between fifty and sixty years of age, who had been subject to a stricture for many years, and had been in the habit of using bougies, kept the parts by that means from contracting beyond a certain extent; but as they were never completely dilated, the contraction constantly returned. In Feb. 1795, he came from the country apparently free from complaint, but found upon getting out of the post-chaise that he could not make water; which brought

on great irritation upon the bladder; and in this state I first saw him. After straining for some time, he voided about half an ounce of urine, which relieved him a little, but the desire very soon returned, and he made the same quantity with similar exertions. I passed a small bougie into the bladder, and allowed it to remain there till the desire to make water came on; it was then withdrawn, and was followed by half a pint of urine, which made him quite easy. I explained to him the reason, why the bougie only gave temporary relief, and mentioned what appeared to me the advantages of the caustic: with these he was so well satisfied as to determine to give it a trial. He was directed to remain quiet the next day, and on the day following the caustic was applied to the stricture; notwithstanding he was a good deal heated by the journey, and had some degree of general indisposition, his pulse being

quick, his tongue white, and his sleep restless and disturbed, it brought on no irritation. The caustic was twice applied to this stricture, after which a common sized bougie passed through it; but a second stricture was met with about an inch and half further back; to this the caustic was applied four times, before the common sized bougie could go on to the bladder. The use of the bougie was not persevered in, and there has been no return of the stricture.

CASE III.

An officer from India, had for twelve years a stricture in the urethra, which brought on violent fits of irritation, and made him have recourse to bougies at different times through the whole of that period. The complaint however always returned, and he had given up all hopes

of any permanent relief. But finding that some of his friends had received so much benefit from the use of the caustic, he wished to give it a trial.

In Dec. 1794, this mode of treatment was adopted. The caustic was applied three different times to the stricture before it was sufficiently destroyed, to allow a full sized bougie to be passed through it. In this case, as the complaint had been of very long standing, it was proposed that a bougie should be passed every day, and allowed to remain a few minutes in the passage, till the tenderness in the urethra from the use of the caustic had gone off; this was done for ten or twelve days, and the bougie was then left off.

The bougie, for the first two or three days, brought on a good deal of irritation along the whole canal, which contracted with some force upon it; and on withdrawing the bougie, it was found to have been tightly embraced by the urethra: this

has happened in some degree in other cases, but not to the same extent; the irritation however gradually went off. This gentleman being upon distant service, I have been unable to hear any thing of him for several months; but when he left town he was free from complaint.

CASE IV.

An officer in the army, who served several years in America, and had been a part of that time in South Carolina; in the year 1776, when about twenty-two years of age was attacked with symptoms of a stricture in the urethra: these were relieved by means of the bougie, but never entirely removed, although its use was persevered in for eighteen years. In this case the bougie was employed under great disadvantages, for his profession called him to the West Indies, where

he resided five years; and after returning to Europe, he went to the East Indies, and remained there several years more before he came to reside in England. In the year 1794, the disposition for contraction in the urethra was so great, that if the bougie was laid aside for a longer period than two months, a difficulty in making water was the consequence; the urethra did not at this time admit of being dilated to any extent by the bougie, but only so much as to allow a tolerably free stream of urine to flow through it.

Under these circumstances, the caustic was applied in May, 1795. There was a stricture about three inches from the external orifice, and the caustic was used three different times before the full sized bougie could pass through it. Another stricture was found at the bulb of the urethra, which required the use of the caustic five times before the same sized

bougie could pass into the bladder; this bougie was a good deal larger than any that had ever been passed before; and the patient found a freedom in making water, and a want of sensation in the bladder, at those times, which for many years he had not experienced. As the complaint had been of long standing, the bougie was passed for a few minutes every day for ten days, to let the parts become easy in this dilated state; lest from habit they should immediately contract again to that size, to which they had been so long accustomed.

He continued free from complaint till July; he then caught an accidental cold, which brought on an irritation in the bladder, and the urine passed in a smaller stream than usual; this alarmed him a good deal, and he applied to me for advice. I desired him to do nothing till the effects of the indisposition went off. He did so; and along with them, the symp-

toms in the bladder and urethra also disappeared.

In October he came to London, and felt himself perfectly well; but when I attempted to pass the same bougie, I was unable to succeed. The use of the caustic was therefore again taken up; it was applied five times before the large bougie passed without difficulty; the parts were now left to themselves, as the bougie appeared to keep up a degree of irritation, in those cases in which it was used so soon after the effects of the caustic.

CASE V.

A gentleman aged forty-six, suspected that he had caught a gonorrhœa, for which he applied to me for assistance; the symptoms did not exactly correspond with those more usually met with in gonorrhœa; I was therefore led to a particular inquiry, and found them to be those

of a stricture in the urethra. As he had been subject to irritation in the bladder, frequency of making water; and had for eighteen months been under the care of a surgeon for a gleet, which gradually disappeared, about a year before the present attack; there was reason to believe the stricture had been formed for many years. I examined the urethra by means of a common sized bougie, and found a stricture near the bulb of the urethra; to this I applied the caustic twice, and removed it, so as to allow the bougie to pass about an inch and half further on, where it was stopped by a second stricture; this had the caustic applied to it three times, and a full sized bougie found a free passage into the bladder. The discharge and other symptoms all went off, and he was free from complaint.

In this case, as well as in many others, there was a tenderness felt in that part of the membrane of the urethra, where the

inflammation in gonorrhoea is commonly situated; this symptom is, I believe, the cause of many cases of stricture being misunderstood; but it is a very common effect of irritation being produced on the stricture, and subsides as soon as that irritation is removed.

CASE VI.

A gentleman who had been some years in China, upon his return to England, had connection with a woman, and was supposed to have caught a gonorrhoea; but the symptoms were not removed by the usual means, and were afterwards discovered to arise from a stricture. Upon having recourse to the bougie, the urethra was found to be extremely irritable, so much so that an abscess formed in perinaeo, while under that course; this on leaving off the bougie got well; and by returning to it again, the stricture, which

was about three inches from the orifice at the glans penis, was dilated: but after its use had been continued for many months, it could not remain in the canal without giving very unpleasant sensations. On attempting to pass the bougie on to the bladder, another stricture was met with at the bulb of the urethra, which allowed a small bougie to pass, but did not admit of the necessary pressure for its dilatation. So very irritable was the canal, that the surgeon, after having proceeded thus far, rather chose to leave the second stricture, than run the risk of bringing on irritation by continuing the use of the bougie.

In this state I saw him, and proposed the application of the caustic, both with a view to enlarge the second stricture, and make it less liable to return. I explained to him at the same time that I regarded this stricture as the original disease, and that which had been dilated only as a consequence of it. He said, he

had no objection to try the caustic, but had great apprehensions that it would not succeed, from the uncommon degree of irritability of the membrane of the urethra, which his former surgeon, a man of eminence, declared to be greater than he had ever met with.

On the twenty-fifth of May, 1795, I applied the caustic to the second stricture, the pain felt at the time was unattended by irritation, and was by no means so severe as he had formerly experienced in retaining in the passage a bougie, that had gone through the first stricture; it did not however go off for several hours after the caustic was withdrawn; a heat and uneasiness remaining in the canal during that period. On the twenty-seventh the caustic was applied again; and while I was pressing it against the stricture, the end of the bougie went through it, which made it necessary to withdraw the caustic; there was a slight degree of pain in

the passage all day, and a little blood was discharged; on the following day, when he made water, there was a tinge of blood upon his linen; but not the smallest degree of irritation. On the twenty-ninth a full sized bougie passed into the bladder without difficulty, gave no pain, and produced no irritation; it was allowed to remain a few minutes, and was then withdrawn. The next day he passed the same bougie himself with equal ease, and immediately withdrew it. He was advised to do the same for seven days, to keep the parts in that state till they had perfectly recovered themselves.

I saw him after this, and he told me that he was perfectly well, and felt now the truth of the remarks which I had made to him; for before the caustic was applied, he had been subject to erections in his sleep, attended with uneasiness, and sensations about the bladder which he then supposed to be natural, as he

had been long accustomed to them; but these were now entirely removed, and he passed his water more quickly than before, and without the usual degree of straining towards the latter part of the time.

On the eleventh of July he caught a severe cold, which brought on an irritation upon the bladder and urethra, and the stream of urine was very much diminished; this alarmed him a good deal: but it proved to be only a temporary complaint, for the same sized bougie passed readily into the bladder, and these symptoms disappeared as soon as the effects of the cold were removed.

In this case the bladder had been so long under the necessity of using great force in expelling the urine, that it took some time to adapt its action to the enlarged state of the urethra. When the patient had the desire to make water, the bladder acted so powerfully, that the

urethra immediately dilated, being unable to resist its action and restrain the urine; this put him to the inconvenience of voiding it at a very short warning; the water was by these means so quickly expelled, that the bladder from habit continued to act for some time after it was emptied, and this contraction upon itself produced a degree of uneasiness. These symptoms in a few weeks went off.

CASE VII.

A gentleman who had been many years in India, and whose constitution had suffered severely from the climate, returned to England, in 1793, in a very bad state of general health, and with a stricture in the urethra. In India he had an ague for four years, and had affections of his joints, for the removal of which mercury was very freely employed; but

without effect, and brought on an irritable state of body, from which he had never recovered.

For the stricture in the urethra, on May 10th, 1795, the caustic was applied. After it had been used four times, a common sized bougie passed through it ; but another stricture was discovered a little further back in the urethra, to which the caustic was applied three times before the bougie could proceed to the bladder. The bougie which passed was attended with some difficulty, and brought on a little irritation ; the caustic was therefore applied a fifth time, and the bougie passed readily : this was directed to be done every day, for a few days, to prevent a return of the disease, and at the end of six days was left off. The use of the bougie had been attended with a slight degree of irritation, during the whole six days it was used. Two days after leaving off the bougie, the patient was caught

in a shower of rain, the weather at that time being very variable, and liable to uncommon and sudden changes of temperature, and caught a violent cold, which brought on a severe attack of ague, exactly like what he had in India; an abscess now formed in the under part of the penis, on the corpus spongiosum urethræ, where it is covered by the scrotum. This showed that the ague was symptomatic of the irritation in the urethra, which brought on the abscess; and it is highly probable, that the ague he had in the East Indies was caused by the stricture, which kept up a constant irritation in the passage. The ague returned very violently every other day, for eight days; the abscess now pointed just before the scrotum, and was opened by the point of a lancet: after this the ague went off, the inflammation subsided; and part of the urine came through the abscess, but by introducing the flexible gum catheter

each time of making water, this was in a great measure prevented; and in a few days the external orifice healed up.

The stricture did not return; but it was thought right to use a full sized bougie, for several weeks, till the parts had entirely recovered themselves. It was afterwards necessary to continue the use of the bougie, introduced for a few inches, to prevent the urine lodging in that part where the abscess had communicated with the urethra; which happened whenever this precaution was not taken; this however gradually diminished, till it went entirely off.

In this case an abscess formed; but as it is the only instance that has been met with where such an event took place, and as the first symptoms came on eight days after the last application of the caustic, and only two after using the bougie, it is with more propriety to be attributed to the irritation of the bougie, than the vio-

lence from the caustic; particularly as it is a very common effect of the use of the bougie when applied to an irritable urethra.

CASE VIII.

An officer in the navy, twenty-five years of age, in the year 1790, while stationed in the Mediterranean, where he had been for some years, had a discharge from the urethra, which he considered to be a gleet in consequence of a gonorrhœa; this was removed in about three months, under a course of injections, and a regular mode of living; and while he continued to live in that manner, he remained free from the discharge, and thought himself well. But in the year 1795, being thrown into situations that required exertions, which rendered his mode of life less regular, and impaired his general health, the discharge returned. As he considered

it to be the gleet come back again, little attention was paid to it; and when I saw him, in the end of August, it was only mentioned accidentally as a proof of general weakness. This symptom I assured him was not constitutional, but was probably the effect of a stricture; in which opinion I was confirmed by his making water more frequently than is usual for persons in health to do, and from his having erections in his sleep, and wet dreams whenever he eat suppers, or drank a glass or two of wine beyond his usual quantity; which had been the case for the last year. I passed a bougie, and found a spasmodic stricture at the bulb of the urethra, which stopped it. I allowed it to remain there for a few minutes, and it went on with difficulty, attended with pain, it also left an impression of the stricture on the bougie. I applied the caustic to this stricture, three different times at the usual intervals; and

the passage admitted a common sized bougie. Finding that in other cases the passing a bougie, under these circumstances, brought on irritation, I did not propose the use of it, and left the parts entirely to themselves.

CASE IX.

A gentleman about forty years of age had a stricture in the urethra, brought on in the East Indies, in which the symptoms of irritation increased to so great a degree, that he returned to England for the recovery of his health. When he arrived in London, he had been eight years afflicted by this complaint, and frequently in that time subject to strangury, from spasmodic affections of the stricture. He had recourse to the bougie, and persevered in its use for nearly three years: during the latter part of this time

he attempted little more than to preserve the passage in the state to which he had before been enabled to dilate it, which was only sufficient to admit a bougie about half the common size. In June 1795, he was obliged to return to India, which made him think more seriously of his situation, and he was induced to try the caustic: it was applied twice to a stricture three inches from the glans, which it removed; but another was discovered a little further on; this second seemed to be in the membranous part of the urèthra. The caustic, after being applied twice, appeared to have produced no effect; but after the third time, the water passed more freely, and a degree of irritation that had come upon the parts went entirely off. The fourth time the caustic went through, and a full sized bougie passed into the bladder; this was followed by an hemorrhage, that lasted the whole day in a slight degree; the parts

were entirely free from irritation, although in making preparations for his voyage, he was obliged to undergo considerable fatigue; this was attributed to the bleeding, which in other cases has produced a similar effect. A bougie of the full size having passed readily into the bladder, he was advised to leave the parts for a few days entirely to themselves, as under similar circumstances the bougie had been found in other cases to bring on irritation; he was afterwards to pass a bougie every day, for a week, and let it remain a few minutes, to prevent the recurrence of the disease.

This precaution was necessary, as the patient was going to a climate, in which the disease is more liable to return; and the means of relief less readily procured.

CASE X.

A. B. aged forty-four, had in the year 1775, an obstruction to the passage of his urine, which was so considerable as to make him apply for medical assistance; he was directed to use the bougie, and when he began that course, one of the smallest size only could be passed: it was however, in the course of some months, increased to a larger size, so as to allow his urine to pass with tolerable ease, and then it was left off. After some time the obstruction returned, and the same mode of relief was resorted to, but the passage did not admit of being dilated beyond the middle sized bougie. In the year 1785, during one of the returns of the obstruction, the scrotum became swelled, but subsided again when the obstruction was removed: he found however that he could not bring the canal to the same size as

before, gradually losing ground in his endeavours to dilate it by the bougie, his stream of urine being smaller, and the desire to make water more frequent. In July 1794, an abscess formed in perinæo, attended with a considerable swelling of the scrotum; the abscess broke, and part of the urine passed through the external orifice, which gave him immediate relief; a fresh inflammation some time after came on, attended with much pain; this also abated upon its breaking and discharging the matter and urine externally. A repetition of this process brought on an irritable state of the parts, and he became unfit for any exertion, the least exercise bringing on pain and irritation. The scrotum was, from the repeated inflammations, become much enlarged and thickened. In these circumstances he put himself under my care in the month of July, 1795; I explained to him that the only mode of relieving his present symp-

toms was by bringing the canal to its natural size, which could not be done by the bougie; I therefore proposed the use of the caustic. I passed a large bougie, which met with an obstruction not much more than two inches from the external orifice; to this the caustic was applied, and on the next trial the bougie passed down about three inches to a second obstruction; the caustic was applied here three times, after which the bougie of a full size went on about four inches to a third obstruction. The symptoms however were much abated, the irritation to make water was less violent, and considerably less frequent, not making water more than twice in the night, which he had before been obliged to do every hour. The caustic was applied to this third stricture seven times before the bougie went into the bladder, and as soon as this was effected, the water ceased to come through the fistula; the scrotum became gradu-

ally less, till it was nearly reduced to its natural size; and he did not void his urine oftener than is commonly done in health. It was thought right, from the length of time the disease had continued, to use the bougie for a few minutes every day to establish the cure; but the bougie gave pain, and the second time of being used brought on irritation, followed by a disposition for inflammation in the perinæum; it was therefore left off, and the caustic again applied till the full sized bougie passed readily; and then the parts were left to themselves.

I saw this patient three months after the caustic had been used, and a common sized bougie passed into the bladder; in other respects he felt himself perfectly well.

CASE XI.

A gentleman, twenty-four years of age, applied to me for advice for a complaint in his bladder, of which he gave the following account. When he was seven or eight years of age, he had at times pain in the bladder, and his urine was very highly coloured; these symptoms he paid little attention to, but recollects that they were sometimes so severe as to make him stop in the middle of his walks, and sit down for some minutes, till the severity of the attack abated; under these circumstances, when ten years old, he passed two triangular stones, each side of the triangle exceeding one-eighth of an inch in length; these gave a great deal of pain in coming through the urethra; but after their expulsion the former symptoms entirely disappeared, and he continued free from complaint for three years. The

same symptoms however recurred at thirteen years of age, and have continued ever since. The attack came on most commonly after emptying the bladder; it began by a heat in the glans penis, and soon after a pain in the bladder, which gradually extended itself along the urethra to the glans penis; and when it reached that part, it was most severe, and began to subside: these attacks lasted sometimes four hours, at others a much shorter time; they brought on sickness at the stomach, and a general uneasiness over the whole body; they were less frequent in cold weather, the longest intervals were five months; but in summer they often returned in a fortnight. For the last three years they have been more frequent, the intervals rarely exceeding ten or twelve days; and for three months past, the attacks have come on with more or less violence every day,

which induced him, in July 1795, to apply for relief.

At this time his urine passed in a small stream, and never in very considerable quantity, which led me to suspect a stricture; and upon examining the urethra by a bougie, a spasmodic stricture was met with. This however allowed a small bougie to go into the bladder; I could not therefore suppose all the symptoms derived from that cause, and suspected that there must be a stone in the bladder. To determine that point a small bougie was passed, and after lying some time in the urethra, a very small silver sound was admitted with difficulty into the bladder; but no stone was found. This induced me to believe there might be a small calculus behind the stricture, too small to obstruct the passage, but too large to pass the stricture, and whenever it was thrown into a particular situa-

tion bringing on those fits of irritation, which could not be attributed to the stricture alone.

From this view of the case it was proposed to destroy the stricture by the caustic; for which purpose it was applied five times, and a full sized bougie passed through; but during this time, which was ten days, there had not been the smallest abatement of the symptoms. This discouraged the patient, but it was found, when this stricture was destroyed, that there was another a little further back towards the bladder, which sufficiently accounted for the continuance of the symptoms. The caustic was now applied to the second stricture; this was done eight times before the stricture would admit a tolerably large bougie; and in passing it the last time the caustic struck upon something hard, so as to be felt by the patient, and very distinctly communicated

to the hand that was passing it ; there was now no doubt of the presence of a small stone behind the stricture, and it was advised to persevere with the caustic till the largest sized bougie could readily pass into the bladder, to give as much room as possible for voiding the stone. The patient had now for the first time a remission of the symptoms for a week ; the caustic was applied twice more, and a full sized bougie went on to the bladder ; the patient voided considerable quantities of coarse crystallized sand, which he had not done before, and felt the small calculus, giving pain by moving in the passage from irregularities on its surface. The large bougie was passed for a few minutes every day, to keep the urethra from being again contracted ; and in this state he went into the country.

This case is one of those in which the disease appears to have its origin from a

small calculus at a very early age, irritating the canal in its passage from the bladder.

CASE XII.

A gentleman, about twenty-two years of age, in his way to Bristol consulted me in May, 1795, respecting a stricture in the urethra, and fistula in perinæo, to know how far they could be connected with complaints in his chest, which were considered of a serious nature. I was also to give an opinion upon the best mode of treating the stricture. In making the necessary inquiries, it appeared that the use of the bougie had been begun under the direction of another surgeon, and every thing was going on very favourably; I therefore had only to approve of the plan that was taken up, and to enforce a steady perseverance in it. He

set off next day for Bristol, where he remained four months, and received much benefit in his general health; he had also dilated the urethra till it very freely admitted the common sized bougie, which he continued to use for a fortnight, to prevent a return of the disease.

In passing through London in the latter part of September, he called upon me to say that he was perfectly well of the stricture. In the course of conversation, I advised him never to travel without bougies, as the disease was liable to return, and it was therefore necessary to be upon his guard. He asked me to pass a bougie, and ascertain the present state of the parts, as it was nearly a month since he had passed one; I did so, and was surprised to find that it was stopped by the stricture, which had contracted so much in that time as not to admit a bougie half the common size.

Under these circumstances, I did not

hesitate to propose the use of the caustic ; which he readily agreed to make trial of, and it was immediately applied. The application was repeated four times before the passage allowed a full sized bougie to go through the stricture ; it was however much larger than any that had been passed before. I then desired the parts might be left entirely to themselves, and not disturbed by passing a bougie. In this state he went into the country.

CASE XIII.

A gentleman about thirty-five years old, who was going upon foreign service, consulted me for an old gleet that was very troublesome, and which he was desirous of getting rid of, before he went abroad. This upon examination proved to be a stricture ; and for the cure the caustic was employed. The use of

the caustic was begun in September, 1795. It was applied twice to the first obstruction, after which the bougie passed about an inch further on to another obstruction; and when this second had been twice touched by the caustic, the bougie went on to the bladder; each application of the caustic was followed by a good deal of blood. The bougie that had been armed with caustic and made use of upon this occasion, after it had passed into the bladder, appeared to be too small to bring back the narrow part of the urethra in this patient to the natural size; it was therefore proposed to arm a larger one, and repeat the application till the stricture allowed it a free passage; for this purpose, once, or probably twice, was considered as all that could be necessary; we were however astonished to find that, after the caustic had been applied three times in this way, nothing was apparently gained; this want

of success led us to believe that a further continuance of its use would avail but little in increasing the width of the stricture; but the fourth application destroyed the remains of the obstruction, and this large bougie went on to the bladder. The caustic was once more applied to make the bougie pass with greater freedom, and then the parts were left to themselves.

The use of the caustic in this case did not give the smallest uneasiness, beyond the local pain, which was neither violent nor of long continuance; this was in part attributed to the bleeding, as it always relieves when it takes place.

CASE XIV.

A gentleman sixty-nine years of age, who had been many years in warm climates, had lived a regular life, and even in his youth had never suffered from venereal complaints; in the spring of 1795 was attacked with a violent inflammation along the whole internal surface of the urethra, extending over the glans penis, and inside of the prepuce. This complaint came on a few hours after toying with a young woman, with whom he had no connection; and therefore could not originate from a venereal cause.

These appearances led me to suspect a stricture in the urethra, and my inquiries were directed to that point; but he declared that his water passed in a full stream, nor more frequently than is usual at that time of life; which led me to treat it as an irritation and inflammation,

brought on by unusual action in the parts. The inflammation subsided, but the discharge continued for several months ; as it was attended with no pain, very little trouble, and could not be of a poisonous nature, hardly any notice was taken of it. At the end of four months a new symptom appeared, the parts in the perinæum had become swelled, and were extremely tender when pressed ; upon examination a small abscess had formed there, and had come so near the skin, that it burst while my finger was applied to it. This swelling had not the appearance of a recent inflammation, and the parts surrounding the membranous portion of the urethra, were hard and thickened, which could in no way be accounted for, but as the effect of a stricture ; I therefore requested permission to pass a bougie, which met with an obstruction a little further on than the middle of the canal. The abscess in perinæo, as well as the former symptoms,

were now very readily explained; they were all brought on by the stricture. As soon as the presence of a stricture was ascertained, the patient, who was a very intelligent man, recollected many circumstances in proof of this obstruction having continued for some years, which till now he had attributed to other causes. I proposed the application of the caustic, as the best mode of treating it; to this he readily acceded.

The use of the caustic was begun on the seventh of September, at which time there was a good deal of uneasiness in the perinæum; this went off immediately after the first application, and the parts became less indurated than they had been before. The second application of the caustic destroyed this stricture; but a little further on there was another, which had the caustic applied to it eight times, without any thing being gained; the caustic however gave little or no pain,

and the other symptoms were upon the whole diminished; this induced us to persevere, and after the twelfth application the stricture was sufficiently destroyed to allow a common sized bougie to pass through it; as soon as this object was gained, the parts were left to themselves.

CASE XV.

A gentleman, seventy years of age, in May, 1794, had a suspicious connection, which brought on a discharge from the urethra; this was supposed to be venereal, and treated accordingly by his surgeon. Under this plan the symptoms went off in a fortnight; and he considered himself cured. On repeating the connection the same symptoms returned, which induced him to put himself under my care. I suspected the symptoms to be those of stricture, and my suspicions were confirmed by a bougie being un-

able to pass into the bladder. The case was now treated as a stricture, and the patient directed to take up the use of the bougie. Two strictures were met with; but in three months the passage was so much dilated as to allow a bougie of a common size to pass through both of them; as the disposition for contraction is in this way difficultly removed, the use of the bougie was continued for a fortnight longer, to establish the cure.

In three months the disease returned; and was treated as before, till the parts were dilated to the same extent as formerly. He now thought himself quite well; but in less than two months had another relapse, for which I was again consulted.

At this time I had adopted the use of the caustic; and proposed to make trial of it, as the benefit derived from the bougie was so short in its duration. In the beginning of the month of September,

1795, the caustic was used; it was applied twice to the first stricture, and four times to the second; by this means they were both entirely removed; after which the parts were left to themselves.

The caustic, in this case, gave no pain whatever; the sensation produced at the time of its application scarcely amounted to uneasiness. In twelve days it procured a passage for a larger sized bougie, than could be admitted after three months had been constantly employed in dilating the parts.

CASE XVI.

A. B. a bricklayer, about forty years of age, came into St. George's hospital in August, 1795, with a stricture in the urethra, several fistulous orifices in the perinæum, and one upon the under surface of the penis, before the scrotum; through these openings the urine passed, hardly any being voided by the natural orifice.

He gave the following history of his complaints: eighteen years ago, he fell from the top of a chimney, and pitched upon the ridge of the house, with his legs astride; by which means the scrotum and perinæum were much injured. These parts recovered themselves without proceeding to suppuration.

Ever since that time he had difficulty in passing his urine, and twelve weeks since, after having undergone considerable fatigue, an abscess formed in perinæo, and burst, discharging blood and urine. Three weeks after another abscess formed, which opened externally before the scrotum; this also gave a passage to the urine; and when the urine insinuated itself into these sinuses, the pain was excruciating.

When he came into the hospital, he made water every ten minutes through the fistulæ, had a considerable degree of straining in the bladder, and tenesmus in the rectum. The external skin of the

scrotum and its neighbourhood, was excoriated by the urine.

On passing a bougie, it met with no difficulty till it reached nearly to the bulb of the urethra, and there it stopped. The caustic was applied to this stricture, after which he had less irritation in the bladder; this was repeated, and the stricture gave way, allowing the bougie to go an inch further, where it was again obstructed; to this second stricture the caustic was five times used, and a full sized bougie was passed into the bladder; but before this was effected the symptoms were very much abated.

The number of fistulous orifices, and the readiness with which the urine got into them, made it necessary to introduce into the bladder a flexible gum catheter, which was retained in the urethra, and the urine by this means prevented from getting into the fistulæ. It could not however be retained above a day or two, without giving uneasiness; it was

therefore, from necessity, occasionally removed. At the end of eight weeks the fistulæ near the anus and those in perinæo were healed, that only before the scrotum continued open.

This stricture, brought on by an accident, and of eighteen years continuance, was entirely removed in fourteen days, by means of the caustic.

CASE XVII.

A boy, six years of age, came into St. George's hospital in August, 1795; he was supposed to have the stone; but no instrument could be introduced into the bladder, on account of a stricture in the urethra.

This case, I have mentioned in the first chapter of these Observations, as an instance of strictures forming at a very early age; since that time I have been able to procure a more complete history of the disease.

The first stricture was between the bulb and the orifice of the urethra ; this had the caustic applied twice to it ; before the bougie could pass through ; a little further on there was another stricture, to which the caustic was applied ; after the first application to the second stricture the symptoms of irritation in the bladder, and difficulty in making water, were sensibly diminished ; and the boy was in every respect better. At this time I sent to the parents, to know whether the boy had ever been sounded, and a stone felt in the bladder. The earnestness of my inquiry raised some suspicions in the minds of these ignorant people, who had no idea of their being made without some interested motive, but of what kind it will be difficult to determine ; and they removed the child from the hospital. While at home he became worse, and suffered exceedingly from irritation in the bladder ; this increase of pain, from which he had been

almost free while in the hospital, induced the mother to bring him back, and apologize for the impropriety of her conduct. Upon his return, although very ill and in constant pain, a bougie passed into the bladder; so that both the strictures had been removed. The irritation in the bladder increased, the water was constantly coming away, and always involuntarily; the bowels became violently affected, so much so as to give the alarm of inflammation in them; a delirium succeeded, he had several convulsions, and died in about ten days from the time of his being brought back to the hospital.

Upon examining the bladder after death, two large stones were found filling up entirely the cavity of the bladder; when dry, they weighed together six drams. The kidneys were both more than double their natural size, and in a distempered state. From these appearances there can be no doubt of the stone

being the original disease; and if we may judge from the size and hardness, they had been several years in forming.*

CASE XVIII.

A sailor, about forty years of age, who had been many years in warm climates, came into St. George's hospital with a stricture in the urethra; which did not readily admit the smallest sized bougie to pass. The caustic was applied to it three different times, after this a common sized bougie could be passed into the bladder, but not without difficulty; this was used once a day, for two or three days together, a few minutes each time,

* A case of stone, in which there was also a stricture in the urethra, fell under my care two years ago in the hospital; the stricture was dilated by the bougie; symptoms of an irritable bladder came on; and the patient died: upon examining the parts after death, a large stone was found in the bladder.

but the bougie brought on a considerable degree of irritation, and was therefore left off. On the following day he had a total ^{retention} suppression of urine; this symptom was relieved by opiate glysters, and he made water in small quantities, but not without a good deal of straining. After the experience I had acquired, of the effects of the caustic in relieving spasm, I did not hesitate to propose its application for the removal of the present symptoms. With this view the caustic was now applied, about twelve o'clock at noon; the irritation during the evening and night was very much relieved, and next day it was entirely removed. On the following day a large bougie passed very readily into the bladder. This was used two or three times, for a minute or two each time, and was then left off; the man was allowed to remain in the hospital for a few weeks, and at the end of that time having no complaint, was discharged.

SECTION II.

CIRCUMSTANCES UNDER WHICH THE CAUSTIC SHOULD NOT BE EMPLOYED.

ALL the cases that have been hitherto stated, proved successful; in many of them, the natural sensibility of the urethra may be considered as having lost in some degree its peculiar delicacy, from the use of the bougie, and thereby rendered more favourable for the application of the caustic; but in the others this was by no means the case.

That I may not be supposed unduly prepossessed in favour of this mode of practice, and may not be understood to recommend a general and indiscriminate adoption of it under all circumstances; I shall now produce cases, to illustrate some of the cautious limitations, and objections, which ought to be kept in view.

CASE XIX.

A gentleman, about forty years old, had a stricture ; which was rendered very irritable in consequence of a connection with a young woman, and by that means first discovered.

It was proposed to destroy the stricture by caustic ; and as he was going into the country, and very anxious to have it done, we did not wait till the immediate effects of the irritation and inflammation brought upon the parts were removed.

When the caustic was used, the pain it produced was unusually severe ; after it had remained upon the stricture about a minute, the parts relaxed, and it went on to the bladder ; upon withdrawing the bougie it was followed by a little blood ; as the bougie was of a full size, and had passed through the stricture, I told

him that at present nothing more was to be done ; that after the pain and tenderness in the urethra had entirely gone off, he should pass a bougie for a few minutes once a day, to establish the parts in their present state. He went into the country the same day, and felt a good deal of pain from the effects of the caustic ; this however in twenty-four hours went off. According to the directions he had received, in two days he attempted to pass a bougie, but was unable to effect it ; a similar attempt was made on the third, fourth, and fifth day, but they were equally unsuccessful. He sent to town to know what was to be done, and was advised to remain quiet, avoiding all causes of irritation ; by doing so the parts in ten days recovered themselves ; and he has ever since been free from complaint.

In this case the urethra was longer of recovering itself, so as to bear the use of

the bougie, than in any other instance; this, although of no material consequence, as he made water freely all the time, is a reason why the caustic should not be employed during the presence of any temporary inflammation in the urethra.

1766. A gentleman, forty-six years of age, applied to me for the cure of gonorrhœa; but upon an inquiry into the symptoms, the disease did not appear to be clearly made out: the present symptoms were a slight discharge, with pain in making water, that was felt along the whole canal, but without tumefaction on the orifice of the urethra. In this inquiry it was found, that previous to the present attack, he had at times made water less freely than usual, was subject to general irritation, and had sometimes involuntary emissions in the

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night, attended with pain. When he had connection with women the semen was not always ejected, but at times passed out after the orgasm was over.

From these circumstances, I was led to believe he had a stricture; but did not venture to decide that he had not also a gonorrhœa: on passing a bougie, he felt a tenderness in the anterior part of the urethra, and at the bulb there was a stricture; this proved to be spasmodic, as a small bougie, when allowed to remain a short time, passed through; it brought on a tenderness along the canal, and increased the pain in making water, which was felt over the whole membrane, as much as in the common seat of gonorrhœa. He was only to remain in town for a few days, and I proposed applying the caustic, to destroy the stricture; which I should not have been led to do under any other circumstances; but

would have waited till the present inflammation, whatever might be its cause, had subsided. I applied the caustic, and he went some miles out of town, drank wine at dinner, and got wet in his feet; all which brought on the usual symptoms of indisposition from catching cold; the pain in making water became extremely violent, a number of small sores broke out upon the prepuce, with a very unpromising appearance; for two days he had great difficulty in making water, and once had it drawn off. By taking diaphoretic medicines, and quietness, all these symptoms went off; the ulcers healed up kindly, and the pain abated. The sores disappearing, rather favoured the idea of the matter not being venereal, as they had not been infected by it. He went into the country, with directions not to return to the use of the bougie. I have heard from him since; he makes

water freely, and has had no return of the former symptoms, which arose from the stricture.

In this case, the local inflammation was much heightened, and the pain aggravated to a great degree, by the effects of the caustic ; its use, therefore, under these circumstances is to be avoided.

SECTION III.

CASES OF STRICTURES LESS READILY REMOVED BY THE CAUSTIC; IN WHICH ITS ACTION ON ONE STRICTURE IS FOUND MATERIALLY TO LESSEN THE SYMPTOMS OF THE OTHERS.

As the following cases tend to prove that the caustic is capable of giving relief to the original stricture, while it is only applied to those that are consequent, or secondary; and also show that if the caustic has been used for a certain time, without completely destroying the stricture, it is liable, as well as the bougie, to bring on a state of irritability, after which no advantage is to be expected from its use, till that state is removed; they are placed together, the better to illustrate these circumstances.

In those cases of stricture that do not admit the smallest bougie to pass, and which are less within the power of relief from the caustic, the cause of its failure arises from the different applications not being exactly to the same surface, and their frequent repetition inducing the irritable state just mentioned; instances of this might be adduced, were it not deviating from the present purpose to take notice of them. Under these circumstances the use of the caustic should be left off for a certain time, and resorted to again. In this way strictures may be got the better of, which a continued perseverance in its use might aggravate, but by no means relieve.

CASE XXI.

A gentleman came from Flanders, four or five years ago, to consult some of the most eminent surgeons in London respecting a stricture in the urethra, and by their direction employed the bougie; and returned home. But from the irritability of the parts, was never able to continue its use, and his complaint increased so much upon him, as to make his life wretched. In this state I saw him, in Flanders, in September, 1793, at which time the smallest bougie could not pass. I applied the caustic, and in consequence of it he was able to pass a small bougie, in which I begged him to persevere. The troubles in that country brought him over to England, in September, 1794, and he put himself under my care. The distresses of his private affairs agitated his mind, and increased the irritability of

these parts; he had several very severe attacks of an intermittent fever, a very common constitutional symptom of stricture, which reduced his strength in a very great degree. I attempted the use of the bougie, and passed a small one into the bladder; from this, however, nothing was gained, for the bougie in passing through the stricture brought on spasm and violent irritation. I adopted the caustic, and destroyed the stricture, which relieved the symptoms so much that it was supposed there were no others; but a few inches further on in the canal there was a second. After touching this once or twice, I wished to proceed with the bougie; but irritation came on, and the ague returned with so much violence as to endanger his life. The caustic was again resorted to; it was applied six or seven times without bringing on irritation upon the parts, and materially relieved both the

constitutional and local symptoms. Having so far succeeded, I was desirous of completing the cure by means of the caustic; for in the present state of the parts, ground was lost instead of gained, by the use of the bougie. I found however that little was to be expected from persevering with the caustic, for the urethra contracted before the armed bougie could reach the stricture, and even when applied to it, there was a slight degree of irritation brought on. As this was the case, and he was much indisposed, he went to Bristol, with a view to restoring his general health, as some of the symptoms in the bladder and urethra seemed to depend on its present state. I wished him, upon leaving town, to do nothing but attend to the recovery of his strength, for as he made water tolerably well, and with little or no irritation, nothing was immediately necessary. The frequency in making water, and at intervals, a dis-

charge of mucus from the bladder, continued with little abatement even after he had considerably improved his health. I therefore proposed his returning to the use of the bougie; this he seemed not to think necessary, as there was no obstruction to the passage of the urine; but upon the principle I have already explained, I told him, that till the urethra was rendered much larger at the contracted parts, these symptoms would continue. He now employed the bougie again, and was able to pass one a good deal larger than the smallest size; but although this was the case many months ago, the progress by means of the bougie has been very small; nor do I believe, from the experience I have had since that time; in similar cases, that much further good can be effected by that instrument, and the cure is only to be completed by the caustic.

CASE XXII.

A gentleman, who had resided ten or eleven years at Bombay, returned to England with a stricture in the urethra, which had been coming on for several years before he left India. The surgeon, under whose direction he placed himself, conceived the idea of overcoming the stricture by pressure, and instead of the bougie, passed a catheter down to the stricture, and made use of some force in pressing against it. This mode of treatment brought on irritation, gave pain, and did not after some time afford any prospect of a cure. Having heard that the use of the caustic had proved more successful, he put himself under my care.

The stricture was situated about the bulb of the urethra; I had, therefore, every reason to suppose there was only one, to which I applied the caustic in

Nov. 1794. After it had been twice used, a full sized bougie passed through, but did not go into the bladder. I suspected now that the prostate gland might be diseased; but found upon examination that was not the case, and this second obstruction proved to be another stricture, which it is highly probable was the original. I applied the caustic to this second stricture five times before a middling sized bougie could be passed, and this by no means with ease; the urethra was beginning to become irritable, and the weather was intensely cold; these were circumstances peculiarly unfavourable to his constitution, which even in India had been affected by the cold season of that climate, and was much more so by the winter here. Having relieved the immediate symptoms, I wished him to remain quiet, and only to pass a bougie for a few minutes daily for some little time, till we should see what would be the

effects of a change in the weather, upon the local as well as the constitutional irritability; and if the complaint was not removed under these circumstances, it would be necessary to return to the caustic.

Nothing was done for six months; in which time the symptoms, instead of being lessened, were a good deal increased; and the caustic was again resorted to. In returning to it, the second stricture only required to be removed; the first, which had been completely destroyed, not having returned. The first time the caustic was applied, it gave little pain; but the second time the parts were all disposed to contract, and I proposed that twenty drops of the tincture of opium should be taken, to diminish this degree of irritability, before it was again applied. This medicine had the desired effect; for the parts were in a much more relaxed state, and a middle sized bougie was admitted

into the bladder ; this, however, was not considered sufficient, and the application of the caustic was continued for ten or twelve times ; nor after all could a full sized bougie be passed, the canal at this part not allowing itself to be enlarged to the same width as the rest of the passage.

In this case a complete cure is, I am afraid, not to be expected from the caustic ; it has, however, procured him considerable relief, which he could not obtain by using the bougie.

The three following Cases were communicated to me by Mr. Stephen Blackader, surgeon to the 99th reg. quartered at Dublin.

DEAR SIR,

Dublin, 23 April, 1795.

In consequence of your observations on the treatment of strictures in the urethra, I have been led to make use of the caustic, in the case of a soldier under my

care. The case appears to me so extraordinary, that I have sent it inclosed ; and as I understood you mean to write upon the subject, you may, if you please, give it a place in your publication.

CASE XXIII.

Isaac Earl, private soldier in the 99th regiment, thirty-three years of age, having caught cold upon duty, was reported to me with the following symptoms; very frequent desire to make water, which he passed in a stream like a thread ; and when he suppressed the desire, it came away involuntarily ; at night he had frequent emissions of the semen. He said that two years before he had a gonorrhœa, and from that period his urine had been voided with difficulty.

Upon passing a middle sized bougie, I found a stricture about three inches from

the glans penis ; one of the smallest wax bougies passed through this, but was stopped by another stricture at the bulb of the urethra ; a small catgut bougie, the size of the first string of a violin, passed through the second stricture into the bladder. I passed the catgut bougies for a few days, and the symptoms became rather milder. At this time I left the regiment to come to London, and sent the man into the Dublin infirmary ; when I returned, I found my patient had been discharged from the infirmary, and was in a much worse state than when I left him. He now made water only by drops ; and every ten minutes or quarter of an hour had an attack of spasm or violent straining come upon the bladder, attended with excruciating pain. When his shirt, or any thing touched the glans penis, some urine came away involuntarily. On passing a full sized bougie, I discovered a stricture about an inch from the glans ; this might have existed

before, as I had neglected in my first examination to pass so large a bougie. Profiting by your instructions, I applied the caustic to this stricture; for five hours after the application of the caustic he had no desire to make water, and when the desire came on he made it more freely; in the course of the night he only made water every hour. Next day a full sized bougie passed down to the second stricture, to which I now applied the caustic, this was done two days successively; and so far was the caustic from producing irritation, that he made water seldomer, with less straining, and slept better at night. The caustic was omitted one day, and the day after a middling sized bougie passed also through this stricture; but as it was not sufficiently removed, I applied the caustic again to it a third time; he made water only twice in the night. After touching the second stricture six times, I could pass a bougie through it of a

moderate size, he now made water with more freedom, and had seldom occasion to void it during the night. I passed the caustic down to the third stricture seven times, at intervals of two or three days; this gave more irritation than when applied to the foregoing strictures, sometimes producing pain in the testicles, with frequent inclination to make water for a day or two; but after the irritation subsided he always made water more freely, and less frequently. Still no bougie could be passed; I therefore touched it three times successively, which gave but little uneasiness, and I could afterwards pass a small bougie. Next day the same bougie did not pass, and the second stricture was increased; this led me again to apply the caustic to the second stricture, which I did five times, and at the end of that period I found he made water much better, and a moderately large bougie passed into the bladder; so that the third

stricture had been principally contracted from spasm, which was taken off by touching the second. In this state of the parts, the patient makes water tolerably freely, and says he is as well as ever he was in his life, nor can I persuade him to remain longer under my care; although the stricture is certainly not sufficiently destroyed, to render that part of the urethra of the same width as the rest of the canal.

I am yours, &c.

S. BLACKADER.

DEAR SIR, Dublin, 10th July, 1795.

I mentioned to you in my last, that I had another case of stricture under my care. As it is not so remarkable as the former, the following abstract will be sufficient.

CASE XXIV.

Joseph Crawford, about twenty-nine years of age, contracted a gonorrhœa about a year ago, and has had the usual symptoms of stricture ever since. When he applied to me he had much pain and straining in making water ; and a small bougie could with difficulty be passed. Having applied the caustic five times, I could pass a bougie about the common size. He now made water pretty freely, but yet not so well as I should have expected from the size of the bougie ; and it often came away in two streams: this I supposed to proceed from a small projection in the stricture, which made an indentation in the side of the bougie about the breadth of a straw. I have since endeavoured to destroy this projection, by passing as large a caustic as the canal

would admit of, eight or nine times, but hitherto without success.

Yours,

S. BLACKADER.

DEAR SIR, Dublin, 12th Aug. 1795.

I have the pleasure of communicating to you another interesting case of stricture, which has turned out still more to my satisfaction than Earl's; though from the following account which the man gave me, I expected to have met with more disease than in the former case.

CASE XXV.

Robert Butler, private in the 99th regiment, applied to me on the 21st of July, for a difficulty in making water, which he passed drop by drop, with much pain and straining, and it often came away involuntarily, particularly

when asleep. He told me he had the venereal disease, with a discharge and scalding in making water, about three years ago. He continued ill until he went into St. Bartholomew's hospital about fifteen months after; at which time he had a swelling as large as a hen's egg in the perinæum, which burst, and the urine came through the orifice. He rubbed mercurial ointment on the part, and the orifice healed; after which he first remarked the difficulty in making water. On passing a middle sized bougie I discovered a stricture, about five or six inches from the glans penis. On withdrawing this, and passing one of the smallest size, I thought I perceived another stricture about an inch beyond the former. Next day I applied the caustic to the first stricture; and after six applications, I could pass a full sized bougie through it. I now plainly felt the second stricture, which was touched with the caustic five times; it

gradually gave way, and I was enabled to pass a bougie of nearly the above-mentioned size into the bladder. He now makes water pretty freely, though still frequently, about three or four times in the night ; but it has almost ceased to come away involuntarily. After the application of the caustic, he sometimes could not make water for three or four hours, and sometimes with difficulty next morning ; but the symptoms were never at all severe. I passed it generally every second day.

Yours, &c.

S. BLACKADER.

In a subsequent letter, dated in September, it is mentioned that he was perfectly well.

In bringing forward a mode of practice, which is entirely the result of experience, too many facts cannot be adduced; since it is from such evidence alone that it can receive its support. The cases I have stated will, I hope, be sufficient to do away any prejudice against this mode of treating Strictures, and lead to its adoption where the methods more commonly pursued are found inadequate to the cure of the disease.

THE END.

